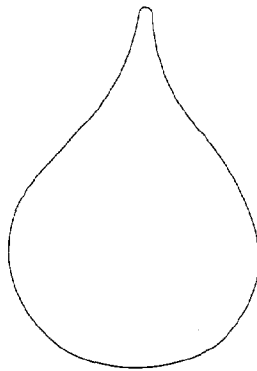


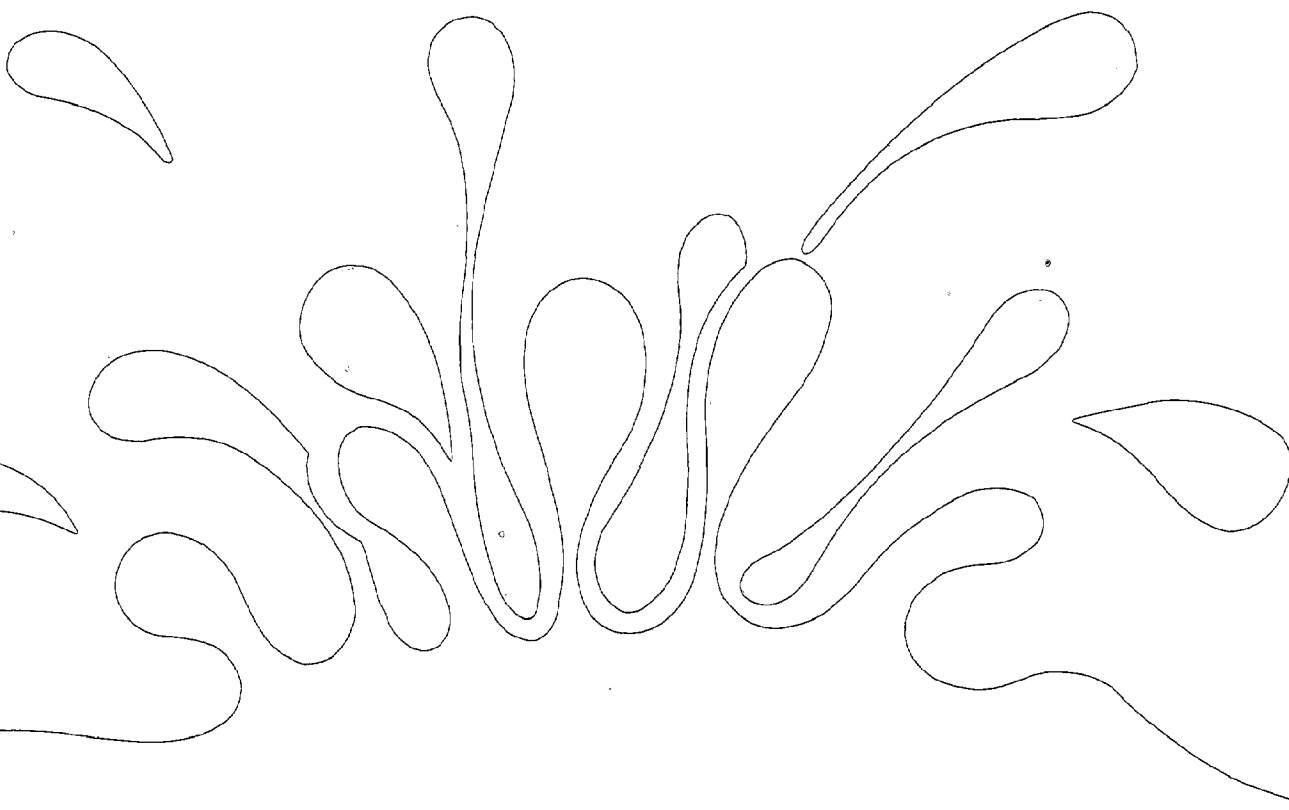
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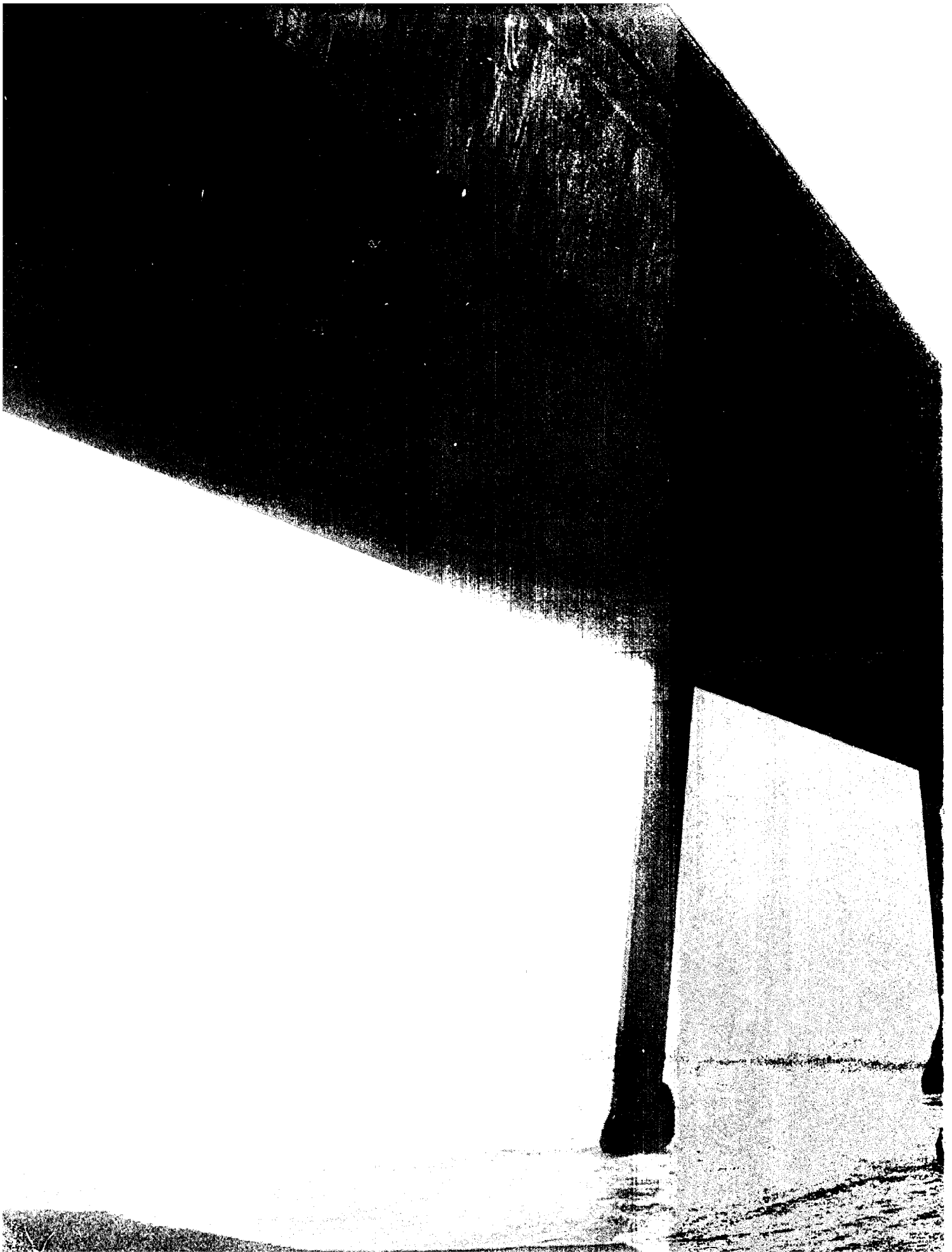


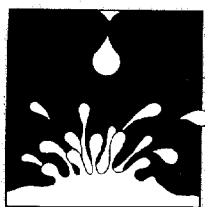
The Big Cleanup

*What the Restoration of Our Nation's Waterways
Could Mean for Parks and Recreation*

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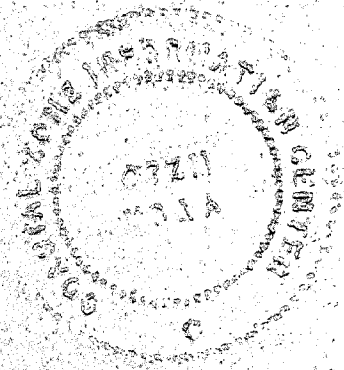
National Recreation and Park Administration



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*One may not doubt that, somehow, good
Shall come of water and of mud;
And, sure, the reverent eye must see
A purpose in liquidity.*

—from "Heaven" by Rupert Brooke



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EDITORIAL

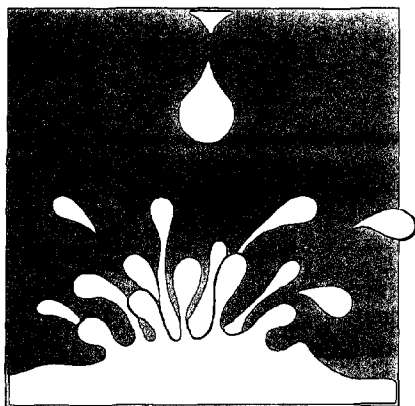
Clean Water: A Skim or Swim Decision

WHAT ARE THE IMPLICATIONS of the Federal Water Pollution Control Act Amendments of 1972 to parks, recreation, and the leisure services delivery system? In this special water quality issue of *Parks & Recreation*, federal officials and others address the question at a time when the effects of water pollution control legislation are everywhere becoming apparent.

The wastewater treatment and planning program is the largest federal public works project in existence, with more than \$18 billion to be spent by 1983. These funds—which are so rapidly being expended—could potentially create untold direct and indirect recreation benefits. If members of the park and recreation community sit idly by they will be depriving the public of new boating, fishing, hiking, bicycling, and swimming opportunities.

Of course those responsible for delivering park and recreation services have never been short of opportunity; they have been short of the resources necessary to capitalize on opportunity. Through help from the Environmental Protection Agency and the Department of Interior, resources are available to turn opportunities into reality.

Under a research grant from EPA and with the cooperation of the Interior Department, NRPA is developing a series of guideline manuals and an audiovisual show to assist the park and recreation community in understanding and cashing in on the benefits of the program. NRPA believes that the potential is great, the stakes high, the opportunity tremendous. The decision is this: Do we simply skim the surface of the benefits which could be derived from the clean waters program, or do we get in and swim?



Water Pollution Control: An Overview of the Laws

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by Eckhardt C. Beck

U. S. DEPARTMENT OF COMMERCE NOAA
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2234 SOUTH HOBSON AVENUE
CHARLESTON, SC 29405-2413

CLEAN WATER is an essential ingredient to man's physical, emotional, and economic well-being. In addition to drinking water supplies, it can provide opportunities for recreational activities such as swimming, fishing, and boating; a healthier and more aesthetically attractive environment; circumstances favorable to sound industrial, commercial, and residential development; and higher land values. These sought-after benefits can be achieved and maintained for future generations only through considerate and careful management of our water resources. Until recently, however, many of us have often considered water a free and unlimited resource, and we, as a society, have failed to use it carefully.

Water pollution has been recognized as a problem in this country since before the turn of the century. The first federal water pollution control law was enacted in 1948, but it was limited. Although valiant efforts to maintain water quality were made in many states, many water pollution problems were so wide ranging that often they were beyond the individual capabilities of state and local governments. By the mid-1960s, most citizens began to identify water pollution as a national problem and to demand a stronger national commitment to obtain clean water.

As the 1970s began, two events occurred that were destined to change the scope and the priority of water pollution control in this country: The first was creation of the U. S. Environmental Protection Agency (EPA), centralizing responsibility for water pollution control. The second was passage of the Federal Water Pollution Control Act Amendments of 1972, which mandated a sweeping federal-state campaign to prevent, reduce, and eliminate water pollution.

The 1972 law proclaimed two general goals for the United States—to achieve swimmable, fishable waters

Mr. Beck is deputy assistant administrator, water planning and standards, Environmental Protection Agency, Washington, D.C.

wherever attainable by 1983 and, by 1985, to eliminate the discharge of pollutants into navigable waters. These goals reflect a deep national concern about the condition of the nation's waters and a strong commitment to end water pollution.

Everybody's Problem

Water pollution is caused by everyone—by the way people live and work and use the water and the land. Water becomes polluted when it is used in homes, in factories, and in businesses. When wastewater is discharged through pipes or sewers it is called a "point source," and this form of pollution is controlled through a national permit system which issues individual permits prescribing the types and the amounts of pollutants that a municipality or an industry can discharge into waterways. Historically, management and control of point-source waste discharges have been the major emphases of the national water pollution control program.

Now, however, there is increasing concern over other pollution that comes from "nonpoint sources"—pollution that is carried over land by rainwater or melting snow or which seeps through the earth and enters waterways in a general manner, not through a pipe or sewer. Examples of such pollution include:

- Rainwater running off buildings and streets and carrying with it oil, grease, trash, salts, lead, and other pollutants, which becomes an *urban stormwater* problem.
- Rainwater washing fertilizers and pesticides and topsoil into waterways, which produces *agricultural runoff*.
- Earth which is washed into streams, rivers, and lakes from erosion, which comes often from *construction runoff*.
- Water in contact with certain minerals in mined areas, which often becomes pollution called *acid mine drainage*.
- Water washing sediments from where the earth has been disturbed from logging and timber operations, which is termed *silviculture runoff*.

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Nonpoint pollution also comes from septic tanks, poor landfills, or underground waste areas where water seeps through the soil, picking up pollutants and carrying them into waterways and groundwater. Unlike point sources, these sources of water pollution generally cannot be collected and treated. Nonpoint pollution can only be reduced by more careful management of our water and land resources.

Early Efforts

Early efforts toward water pollution control almost exclusively emphasized the cleanup of municipal wastewaters. The Federal Water Pollution Control Act of 1956 authorized federal grants to municipalities to help finance construction of treatment facilities. Such funding was increased by subsequent amendments to the act.

The establishment of water quality standards for our rivers, lakes, and estuaries was begun under the Water Quality Act of 1965. At the same time, there was a marked expansion of state water pollution control programs. More and more of the states inaugurated construction grant programs of their own, and state and local governments worked more closely together to stimulate construction of waste treatment facilities. By the end of the 1960s, federal, state, and local efforts were

beginning to mesh into a national program for clean water. But it remained obvious that existing government laws and regulations were inadequate for the monumental cleanup needed. For one thing, the federal enforcement procedures, which are limited to interstate pollution, were complicated and very slow. In the six years following passage of the 1965 law, only 56 federal enforcement actions were begun. Only four got past the conference level. Only one ever got to court.

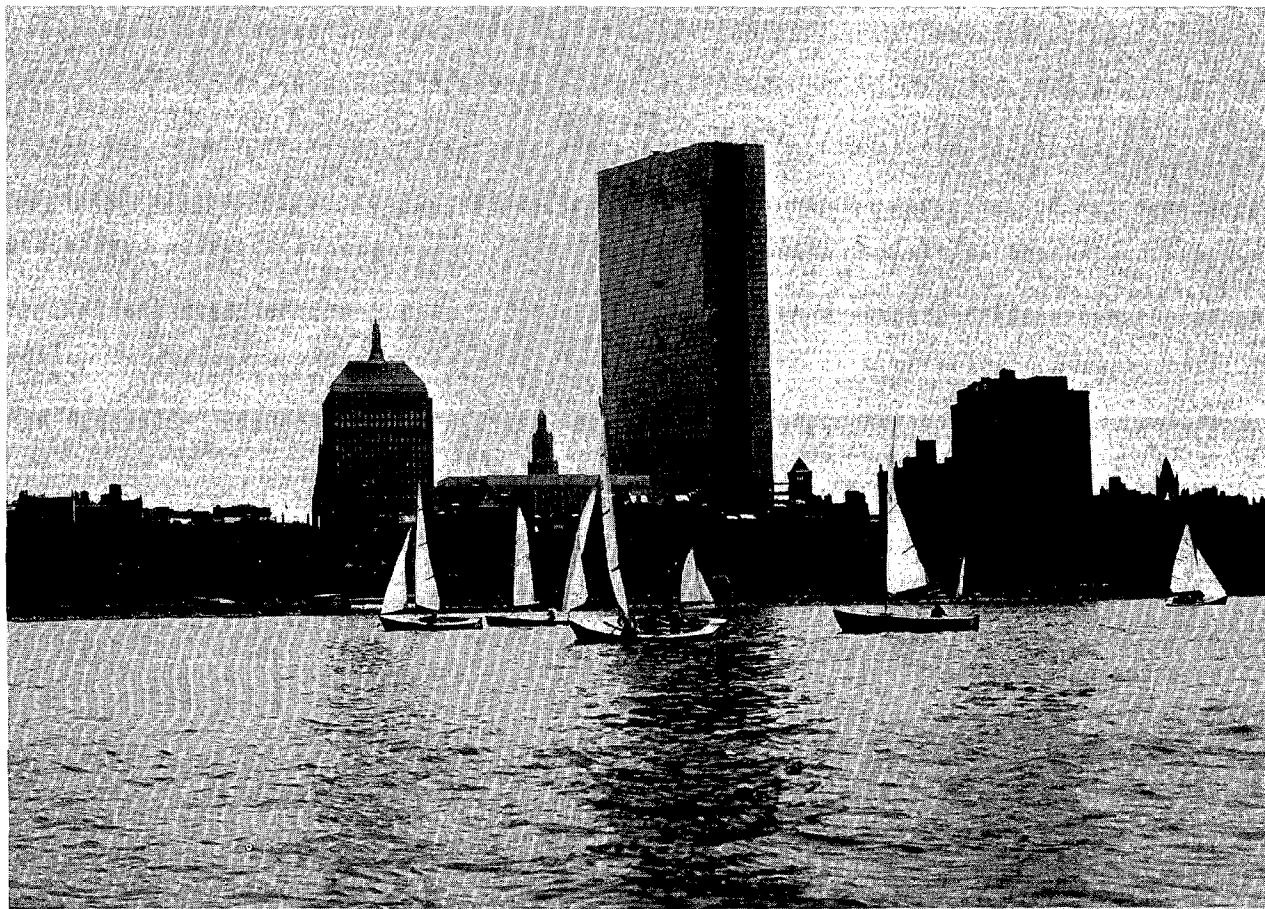
Public Law 92-500

On October 18, 1972, the Federal Water Pollution Control Act Amendments became Public Law 92-500. These amendments overhauled previous legislation, streamlined procedures, and initiated the most comprehensive program of water pollution control in the world.

The law established national goals to be achieved, assigned direct responsibility for implementation of those goals, and authorized funding by the federal government. It also established detailed program planning responsibilities for state and areawide governments and agencies.

The primary objective of the act is to "restore and maintain the chemical, physical, and biological integrity

ENVIRONMENTAL PROTECTION AGENCY PHOTO



Early federal water pollution control efforts concentrated almost exclusively on municipal waterways.

of the Nation's waters." To achieve this objective and to attain the national goals, the act provides for a number of authorities, including the following programs:

- Uniform, enforceable national standards for clean water and regulations to enforce those standards.
- A national permit program for discharges from all point sources—industrial, municipal, commercial, agricultural, and other facilities that release pollutants through pipes and sewers.
- Federal funds for construction of sewage treatment systems.
- State and areawide planning and management programs to coordinate broad-based pollution control decisions and to implement feasible methods to achieve clean water over the long term.

The Public Role

One of the major expectations of Public Law 92-500 was that the public would play a key decision-making role in all water pollution control activities. Section 101 (e) of the act states that "public participation . . . shall be provided for, encouraged and assisted . . . at federal, state and local levels." Such public participation is a major component of recreation programs as well, particularly the Statewide Comprehensive Outdoor Recreation Plans.

The interested citizen is invaluable in ensuring that government programs are used for the broadest long-term community benefit. It can take only a few committed people to awaken a community to a new opportunity; members of the public can be the initiators and catalysts who bring a diversity of interests together to work on a shared goal. Local government officials have a significant opportunity to secure the benefits of federal and state programs for their communities, and with this opportunity there is the responsibility to encourage public participation to ensure maximum benefit from the programs. To make the most of these benefits and opportunities will take the mobilization of state and local park and recreation professionals, elected officials, environmental groups, civic organizations, sportsmen, chambers of commerce, and the other groups who support community progress.

Indeed, the potential exists for all citizens to derive the maximum personal benefit from clean rivers and enjoyable waterfronts. Land, low in value because of polluted water, can be enhanced through water pollution control and through federal, state, and community open-space programs. When this is accomplished, the public will reap a bonanza of recreational opportunities as the water becomes clean and usable for swimming, fishing, and boating, and the waterfront enjoyable for walking and picnicking.

There are a number of ways park and recreation professionals can become instrumental in achieving more of the benefits possible through water pollution control:

1. Review the Statewide Comprehensive Outdoor Recreation Plan. Find out what the priorities are for federally assisted open-space acquisition and recreation development.

2. Find out the land-use plans of relevant local governments. What are their priorities for open-space acquisitions? What uses do they envision for waterfront properties?

3. Compare open-space acquisition and land-use plans with water cleanup schedules. Determine those areas where the programs are out of phase and participate in adjusting priorities.

4. Participate in state and areawide waste treatment management planning. Help ensure that plans address coordinated waterfront protection and recreation use, and help explore land uses for waterfront areas which will contribute to, rather than degrade, water quality.

5. Investigate sources and treatment of drinking water supplies, including groundwater. Inquire about programs to protect these sources for the future.

6. Become familiar with plans and priorities for sewage treatment plant construction. Review the state priority list, and look for areas where particular cleanup progress can be made.

7. Find out the schedules by which polluters are cleaning up their discharges, as specified in their National Pollutant Discharge Elimination System permits. Combine this information with the schedule for municipal treatment plant construction to find out when and where water will be cleaned up.

8. Investigate and list the sources of nonpoint pollution in your area. Check to see what management practices are being employed or could be employed to reduce this pollution.

9. When a sewage treatment plant is being planned and constructed, participate in the preparation of the facility plan. Make sure that opportunities for multiple-use and joint development are studied, and that good plans are developed.

10. Look into the operation and maintenance of your local sewage treatment plant. Is it operating efficiently and effectively? Does it have the skilled operator necessary to ensure proper operation?

11. Find out when the state intends to review and revise water quality standards. Make sure the standards reflect uses which enhance public park and recreational opportunities.

12. Participate in the annual state program review. Match the Statewide Comprehensive Outdoor Recreation Plan with that of the state water program to ensure that adequate staff and resources are allocated for waterfront parks and recreational opportunities.

The significance and the effectiveness of the 1972 water pollution control amendments are clearly evident today. After just four years, the nation's waters are beginning to reflect the results of this massive cleanup effort. Fish are returning to waters where they have not existed for decades; people who have known their rivers and lakes only as open sewers, unfit for recreational use or aesthetic enjoyment, are seeing a transformation begin. And, as the provisions of the act dealing with nonpoint sources are pushed forward, even greater improvements in water quality will be made. Citizens must therefore develop a special vigilance to preserve the waters that

have already been made clean. Public Law 92-500 sets a specific short-term goal. It is now up to all the people to ensure that goal and to preserve and protect our country's good water quality for the generations to come.

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Public Law 92-500 looks at the water pollution problem from several angles; a number of programs are established under different sections of the act. These provide the tools for citizens, localities, states, and the federal government to use in achieving clean water. Following are summaries of some of the most important sections of Public Law 92-500.

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Section 101(e)—Public Participation. Section 101(e) contains one of the strongest requirements for participatory democracy in the entire federal statute book. A major expectation of Congress was that the public would play a key decision-making role in all water pollution control activities. The words of Section 101(e) are explicit and comprehensive:

Public participation in the development, revision, and enforcement of any regulation, standard, effluent limitation, plan or program established by the Administrator (of the Environmental Protection Agency) or any State under this Act shall be provided for, encouraged, and assisted by the Administrator and the States. The Administrator, in cooperation with the States, shall develop and publish regulations specifying minimum guidelines for public participation in such processes.

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Section 106—Annual State Program. Section 106 mandates that states annually assess statewide water quality problems and authorizes federal resources to help solve those problems. An annual state program is to have at least five parts:

- A summary of water quality problem areas in the state.
- A description of individual state program elements (such as management of municipal facilities, permits, compliance schedules, planning, public participation, etc.).

Taking Route 201 to Recreation Benefits

RECREATION areas around sewage treatment plants, bike trails along interceptor lines—impossible ideas a few years ago. But with today's progress in water cleanup, such projects are not only being considered, they actually exist. And more are underway.

Communities are discovering that recreational benefits can be realized by more fully utilizing opportunities presented by the Section 201 program. Although EPA sewage treatment facility funds cannot be used to directly fund recreation projects, the program does present opportunities to develop supplementary benefits and to achieve significant savings in recreational dollars as well.

A sewage treatment project goes through a number of steps from its inception to final construction and maintenance. Throughout this process are points where a community can initiate consideration of added park or recreation facilities.

For example, a community decides that the interceptor route could provide an excellent bike trail. Since a right-of-way easement must be negotiated for the sewer line, residents could request a provision in the easement for the bike trail at the same time. Other points in the process where the bike route might be considered are:

1. When the project is placed on the state priority list to receive EPA funding, a corresponding ap-

plication might be submitted for funding to the Land and Water Conservation Fund (assuming that the bike trails have been identified as a priority recreation activity in the State Comprehensive Outdoor Recreation Plan).

2. When a consultant is being considered to plan the facility before the application is made, residents might indicate their desire to build the bike trail and inquire whether the consulting firm has expertise for designing it as well.

3. During Step 1 of the 201 program, in the planning stage, the consultant might be encouraged to consider the possible recreational benefits in the various project alternatives within the facilities plan, including a bike trail along the proposed interceptor route. Also, at the public hearing on the plan, citizens and the recreation department could support construction of a bike trail.

4. In Step 2, the design stage, a community might allocate use of additional funds from a recreational budget to design the bike trail.

5. In Step 3, the construction stage, savings could be realized in the cost of moving heavy construction equipment to the site if a provision is made to use the appropriate equipment—already there for the facility development—for the bike trail as well. While funds for this additional work may not come from the EPA grant, they might be provided through local recreational funds or the Land and Water Conservation Fund, should the project qualify. ☐



Wastewater treatment plants are being constructed at a rapid rate under the Section 201 construction grant program.

- A five-year projection of resources needed to conduct the state program as estimated in the state strategy. This projection will provide a basis for continuous water quality program planning and budget justification. Included should be general financial and man-year resource requirements for each year of the five-year cycle.

- A table showing projected outputs for each program element during the next fiscal year.

- A detailed resource summary sheet showing specific financial and man-year allocations for each program element during the fiscal year.

Public input into the annual state program process can produce a tangible result, since the program includes the allocation of state resources to solve water quality problems. The preliminary state program is submitted by the state to the appropriate EPA regional office on May 1, along with the state strategy and any revisions to the continuing planning process. These are considered and modified, and a final state program is worked out by September 1.

The four-month review and revision period for the annual state program is the time when state officials can be made aware of the need for park and recreation opportunities. These opportunities can be realized through multiple-use of state-planned sewage treatment plants, acquisition of waterfront land in areas slated for intense cleanup efforts, and other arrangements.

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Section 201—Construction Grants. The construction grant process provides for direct, federal matching grants of 75 percent of the cost of planning, improving, or building sewage treatment plants and their connecting sewers to local governments to help them meet their responsibilities under the pollution control legislation. The program is the largest single, federally assisted public works program developed in this country since the federal aid to highways program.

Construction grant authorizations are distributed to states by Congress. State agencies rank projects by

After just four years, the nation's waters are beginning to reflect the results of this massive cleanup effort. Fish are returning to waters where they have not existed for decades; people who have known their rivers and lakes only as open sewers, unfit for recreational use or aesthetic enjoyment, are seeing a transformation begin.

priority according to the severity of pollution problem, population served, and other factors. Applications with sufficient priority for available funds are forwarded to the appropriate EPA regional office for further review and funding. After a federally funded facility is in operation, the local government must recover operation and maintenance expenses through a user-charge system. It must also recoup from industrial users an appropriate proportion of the federal outlay that went into its construction.

The 1972 legislation allows the construction of treatment works to be funded in three steps: The first step provides funds for basic planning and selection of a cost-effective and environmentally sound solution to local municipal pollution problems; the second, for engineering, architectural designs, drawings, and specification; and the third and final one, for actual construction.

Citizen participation should begin at the step 1 phase. In this planning phase, decisions affecting size of the treatment plant, the level of treatment, and the size and location of interceptors and trunk sewers are made. These decisions, which will affect growth rates and development patterns, are of vital concern to citizens.

The planning requirements for municipal wastewater treatment facility development, most of which are in Section 201, are known as "facility planning requirements" and are linked significantly to Section 208, which is oriented to regional or statewide planning. Section 201(c) requires that "to the extent practicable, waste treatment technology shall be on an areawide basis and provide control or treatment of all point and nonpoint sources of pollution." Facility plans must also be consistent with EPA-approved waste treatment management plans, another requirement which links 201 facility planning to Section 208.

Alternative waste treatment management techniques and the environmental consequences of such alternatives must be considered in planning facilities funded under Section 201. These techniques include treatment and discharge of effluent, treatment and reuse, and land application. Coordination of waste treatment facility planning with planning for recreation and open-space opportunities for an area is also encouraged by the law.

* * *

Section 208—Water Quality Management. Section 208 is perhaps the most comprehensive program Congress es-

tablished under Public Law 92-500. The program can tie together the various water pollution control and abatement requirements, including municipal, industrial, residual waste, runoff, and groundwater pollution control. The law places the responsibility for developing and carrying out solutions to these problems with state and local governments.

Congress considered several points in creating Section 208 and insisting on the development of state and local decision-making powers. First, the complex technical and political problems of water quality protection vary so widely across the nation that long-term solutions to these problems, especially where the solution is not suited to a national standard, depend on actions by state and local governments. And second, much of the commitment needed to resolve water quality problems rests with these same state and local governments. Implementation of 208 programs may also require new legislation or institutional arrangements for water quality control. This also makes the involvement of state and local officials essential.

Under Section 208, geographic areas with significant water quality problems are singled out for areawide planning. An agency of local governments is selected by the governor to do the planning. EPA then provides funding to develop a comprehensive program to control municipal and industrial wastewater, storm and sewer runoff, and nonpoint-source pollution, and land use as it relates to water quality. A state must perform the 208 planning in all nondesignated areas within its borders and must coordinate its planning with that going on in the designated areas.

In short, the purpose of the 208 program is to provide information for sound decision making by state and local officials so that they can take the initiative. Management is the key to the process. A 208 management plan should be cost-effective, politically feasible, and, above all, practical. What makes 208 unique is that state and local governments must develop an approved plan, with the commitment to undertake whatever action is necessary to achieve the 1983 goals.

Section 208 provides the only authority under federal law to control nonpoint-source pollution. This type of pollution is a difficult problem. Because solutions are not always obvious or easy to correct, more innovative approaches will be required than for any other aspect of the act. While EPA will do research and provide technical assistance to 208 planning agencies, the answer to nonpoint-source problems must be tailored to each region by each 208 agency.

The majority of the 208 plans will be submitted during 1978; all initial plans must be submitted to EPA for approval no later than November 1, 1978. A 208 plan should be oriented toward achieving state water quality standards and must be updated annually through the state continuing planning process. The contents may vary geographically—in Nebraska, the major pollution problems may be runoff from feedlots and croplands; the major problem for Cleveland may be pollution from industrial and municipal sources. Each 208 plan will focus on the area's most critical water quality problems. All

must address the items listed below in some detail:

- *Population, household, and economic projections* for a 20-year period.
- A summary of *existing land uses* (residential, commercial, and industrial) within the planning area.
- A *classification of all streams* and other navigable waters into two types of segments: those which meet state water quality standards now or which will meet them after limiting the amount of pollutant discharges on the basis of national uniform requirements (called effluent-limited segments), and those segments which will not meet applicable state water quality standards

even with nationally based discharge limitations (called water-quality-limited segments). For the latter type, the state water pollution control agency, under Section 303 of the law, will establish more stringent requirements on allowable pollution.

- *An inventory of pollution* from all point sources—such as municipal and industrial waste treatment outlets—and from nonpoint sources, such as erosion caused by stormwater and agricultural runoff. Nonpoint sources control will be necessary in most areas to meet the law's goals; in some areas, in fact, nonpoint sources are the major water polluters.

The Public and the 208 Program

IN SECTION 101(e) of Public Law 92-500, Congress clearly expressed its determination that public opinion be reflected in all decisions made about water quality.

Section 208 sets forth a process for producing and implementing state and local plans to achieve cleaner water. State and local elected officials will choose and decide exactly how this will be done in their areas. The resulting plans, however, must be fair, feasible, and acceptable to the general citizenry, including those responsible for the plan's implementation.

The combination of Section 101(e) and Section 208 means that each of the 176 areawide 208 agencies and each of the 49 state 208 agencies must actively seek help from citizens in formulating their water quality plans. And, if the clear Congressional intent of this law is to be realized, a variety of interest groups must be asked for their opinions to become involved.

To help ensure that the Congressional vision of participatory decision making becomes a reality, EPA has teamed up with a variety of national non-profit organizations. These groups, which represent a wide variety of interests, are working both separately and together to assist and encourage the participation of their members in the 208 process.

For instance, the National Association of Conservation Districts (NACD) has researched existing sediment erosion and control laws and has drafted model legislation which might be used to control nonpoint source pollution often attributed to faulty farm practices.

The National Association of Counties (NACo) is giving on-site assistance and training to elected and appointed county officials. This will help local decision makers to understand the 208 program and its potential impact on their counties and will raise

the likelihood of producing implementable plans.

The League of Women Voters is encouraging intensive involvement by local chapters in the 208 process in 20 areas.

The Urban Land Institute's (ULI) membership includes developers, mortgage bankers, realtors, and other land users. ULI will use its widely distributed publications to describe environmentally sound land practices and will promote constructive involvement in 208 programs.

Three other national organizations are working on projects which are of particular interest to those involved with parks and recreation.

The Izaak Walton League's Water Wagon has been modified to include presentation of EPA's 208 program. The Water Wagon attracts substantial publicity and a wide audience with its traveling road show. (A schedule of the Water Wagon's route can be obtained by writing The Izaak Walton League, Water Wagon Information, Bob Axelrad, 1800 North Kent Street, Suite 806, Arlington, Virginia 22209.)

The National Wildlife Federation will be conducting two-day workshops in the spring in four separate locations to discuss specific 208 programs. Interested people from each area will be invited to participate. The workshops will concentrate on encouraging public participation in such issues as water quality standards, antidegradation of rivers and streams, and the coordination of Section 208 planning with facilities planning under Section 201. (More information can be obtained from National Wildlife Federation; Lee Daneker, Project Director; 1412 16th St., N.W.; Washington, D.C. 20036.)

NRPA is producing three technical manuals and a slide show which are specifically for professionals involved with parks and recreation areas. The manuals will give specific guidance about how to use the 208 planning process and the 201 facilities planning process to obtain recreation, education, and open-space benefits for the public. □

- Identification of new and expanded municipal sewage treatment plants necessary to handle the area's wastes for the next 20 years and meet the state water quality standards.

- Identification of methods to keep sludge from polluting both surface waters and groundwater.

- Identification of new and improved stormwater systems for urban and industrial runoff problems, with special emphasis on land management controls (on-site detention storage, for example, would receive more emphasis than, say, the construction of new pipes and conduits for off-site treatment).

- Identification of all regulatory programs and land-use measures to control nonpoint pollution such as zoning, subdivision regulations, floodplain regulations, and performance standards—and an assessment of the time required to achieve the desired results.

- Identification of public agencies with the administrative, legal, and financial capabilities to construct, operate, and maintain treatment facilities and/or to implement the regulatory programs on nonpoint sources. These are the agencies that will be responsible for actually implementing the 208 plan.

- An assessment of the social, environmental, and economic impacts of the plan.

Most managers of parks or recreation areas spend considerable time, money, and energy preserving the aesthetic quality of their areas. Water pollution, however, does not stop at a city limit or a state border. Thus, a wilderness park in the West is affected by lumbering practices upstream. The Great Swamp Refuge in New Jersey is threatened by increasingly polluted water in its four feeder streams. The undeveloped Fire Island (New York) National Park is losing ground due to development practices outside of its boundaries.

Section 208 planning also crosses city, county, and town limits. This regional or statewide approach offers unique opportunities for those interested in parks and recreation. Through the 208 program, park professionals and recreation specialists can help plan for better land management and other practices affecting water quality outside their own areas, and thus can provide and preserve park and recreation opportunities for all citizens.

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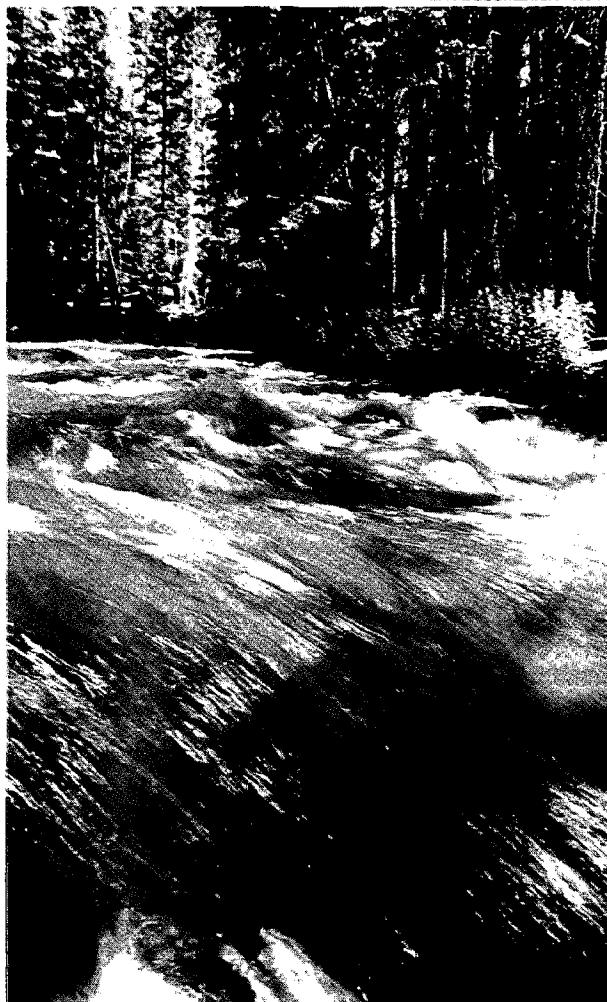
Section 303—Water Quality Standards. Federal-state water quality standards set forth specific beneficial uses of stream sections, the water quality criteria to support such uses, the policies which will prevent deterioration of water quality, and, in some cases, methods for water quality improvement. These standards provide the goals for the water quality management plans, the pollution discharge permit program, dredge material discharge programs, construction grant programs, land-use controls, and other efforts designed to improve or maintain water quality.

Before 1972 the law required that state water quality standards contain an implementation plan or timetable for the construction of treatment facilities necessary to bring the water to the desired water-use and quality level. Enforcement of the standards was by standard set-

ting or enforcement conferences. In effect, the major national pollution control effort was based on the enforcement of water quality standards.

In developing Public Law 92-500, Congress realized that pollution controls based only on the setting and enforcement of water quality standards were not only cumbersome but were also not particularly effective. It recog-

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Clean streams do not follow political boundaries. They are everyone's responsibility.

nized that water quality standards could more effectively specify water quality objectives and so changed the law from one based principally on a quality standard to one based on the control of discharges through effluent limitations.

Water quality standards must be responsive to the needs of society. The law and the EPA regulations and guidelines for water quality standards recognize this need and have ample provision for public participation. In addition, the law forces such a response by requiring the states to review and revise, if necessary, their water standard at least every three years.

The review and revision effort is a primary function of

the states; but, to better know what changes are needed in the standards, others should become involved. Citizen groups, outdoor recreational associations, fishing and hunting organizations, resource-oriented associations, and other groups of individuals who have an understanding of water-use needs are sources of information. By using these outside sources and its own expertise, the state agency is better able to revise proposed standards. The revisions then are made available for further public comment at public hearings held at appropriate locations in the state.

To provide for national continuity and to ensure that water quality standards reflect national water quality goals, the federal government also approves water quality standards. The state will usually ask EPA to review the proposed standard at or before public hearings. After analyzing the comments received from public hearings and from EPA, the state adopts the standards and asks for federal approval. If a state does not establish water quality standards that are consistent with national goals, the federal government has the authority to set different standards which will be consistent.

The three-year cyclic review process began in 1972 when the law was enacted. The federal guidance for that review was quite broad and established physical parameters in the standards, such as dissolved oxygen content, temperature, and turbidity.

The second review cycle is now in progress and the states are currently analyzing their standards. States will determine if the existing use classification is appropriate and if the water quality criteria definitively support the use. The state's antidegradation policy statement will be examined specifically as to whether it prevents avoidable degradation of high-quality waters and precludes any quality degradation of valuable natural resource waters. If the state proposes to downgrade standards, a strong justification must be presented based on natural conditions, irretrievable man-made conditions, or widespread socioeconomic damage. The state antidegradation policy should also stress the need to upgrade the use classification and water quality criteria where warranted. EPA develops the basic regulations and guidelines that implement the water quality provisions of the law. In addition, EPA is required to provide water quality information. This is provided in a publication, *Quality Criteria for Water*, which outlines the effects of water-borne substances on aquatic life and on the consumers of aquatic life. Based on published scientific information, this publication specifies the concentration of water contaminants that should not be exceeded. It is used by the states as a guide in revising the water quality criteria associated with uses defined in their water quality standards.

People concerned with or affected by the water quality of recreational areas should be aware of and participate in the water quality standard review and revision process. There are several points for contributions: the first is during the Section 208 water quality management program. Here, information on an improper use classification or a vague criterion can be made known to the head of the appropriate 208 planning agency. The public hearing is another opportunity for the general public and

federal, state, and city agencies to provide comments and support.

★ ★ ★

Section 402—The Permit System. The National Pollution Discharge Elimination System (NPDES) may be the most significant enforcement tool contained in the Federal Water Pollution Control Act Amendments of 1972.

NPDES is a national permit program to control the discharge of pollutants into waterways from all specific point sources, including industry; municipal sewage treatment facilities; certain agricultural, forestry, mining, and fishing operations; and other commercial activities. It is administered by EPA or by an EPA-approved state program.

Congress designed NPDES as a tight regulatory system with precise and detailed abatement requirements, enforcement procedures, and heavy penalties for violators. Included are these requirements:

- National effluent limitations and performance standards are established by EPA for sources of water pollution such as factories, power plants, sewage treatment plants, animal feedlots, and others.

- All publicly owned sewage treatment plants must provide a minimum of secondary treatment by July 1, 1977, and the best practicable technology by July 1, 1983.

- Industry use of best practicable technology is required by July 1, 1977, and best available technology by July 1, 1983.

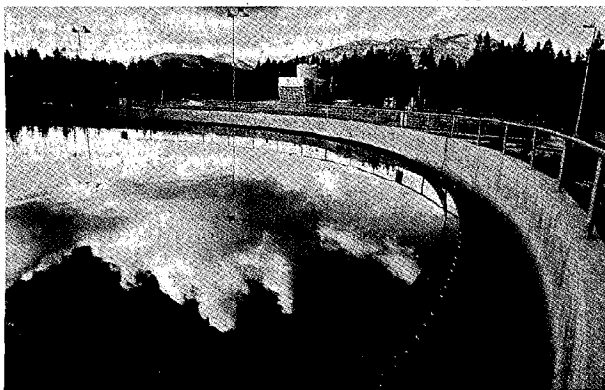
- More stringent permit requirements than EPA's maximum limitations may, if necessary, be set by the state to achieve quality standards for water in rivers and streams.

Under the water law it is illegal to discharge any pollutants into the nation's waterways without a permit. The permit regulates what may be discharged and how much. Firm target dates are set. A discharger must reduce or eliminate his discharges in an orderly fashion, in specified steps, at specified times. Any violation of the permit is a violation of the law and the violator is subject to stiff penalties that are enforceable in court.

As of the middle of last year, EPA and the states had issued 47,785 permits to the nearly 62,875 known dischargers. Of these, some 18,541 were issued to the 20,811 known municipal dischargers. Of the 42,064 known non-municipal dischargers, some 29,244 permits had been issued.

The ultimate guarantee of the permit system's effectiveness is that it must be carried out under full public scrutiny. Permit applications and proposed permits are available to the public. There is an opportunity for a public hearing on each permit application before action is taken. The permit itself, with all its conditions and requirements, is a public document, and all monitoring information that permit holders are required to report is also available to the public.

The NPDES permits can be valuable tools for furthering the interests of recreation and parks specialists. The permit, by assuring the reduction of point-source pollution, can help to restore and maintain the natural quality of our streams, rivers, and lakes. Clean waters around



Wastewater treatment plants are not always ugly.

sewage treatment plants can mean more and more sites for expanded recreational and park facilities. And the NPDES program also helps protect wetlands. When new permits are issued, EPA will consider the environmental impact of pollutants which may adversely affect these vital areas.

Most important is that Public Law 92-500 authorizes any citizen or group of citizens whose interests are adversely affected to take court action against anyone violating an "effluent standard, an effluent limitation, or an order issued by EPA." The NPDES program therefore enables every citizen to be a "watchdog" over our country's waterways.

* * *

Section 404—Controlling Discharge of Dredged or Fill Material. Section 404 of the water law can help prevent or reduce damage resulting from the discharge of dredged or fill materials into United States waters and wetlands. The core of the program, which pertains to traditionally navigable waters, is relatively noncontroversial. Other portions, however, affect areas outside of traditionally navigable waters and have changed the historical concepts of water management. Operations falling under this program's influence range from the construction and maintenance of channels for boats to the promotion of aesthetic considerations such as water turbidity.

Public Law 92-500 classifies dredged and fill materials as pollutants when they are discharged into United States waters. Section 404 authorizes the U. S. Army Corps of Engineers to issue permits, after public hearing, for discharging dredged or fill material into navigable water at specified disposal sites. It requires the EPA administrator to prepare guidelines in conjunction with the secretary of the army for the Corps of Engineers to use in issuing permits. (The secretary of the army may override the EPA guidelines should there be adverse economic impact on the site and anchorage.) The EPA administrator may prohibit use of a disposal site if he determines, after a public hearing, that a discharge will adversely affect municipal water supplies, wildlife, recreation areas, or shellfish beds and fishery areas (including spawning and breeding areas). Before reaching such a decision, however, the EPA administrator must make public his

findings and his reasons.

To date, three documents cover regulations and offer guidance on discharge of dredged material in navigable waters.

1. The Army Corps of Engineers published interim final regulations in the *Federal Register* on July 26, 1975. Titled "Permits for Activities in Navigable Waters or Ocean Waters," the regulations define the federal jurisdiction and explain the permitting process.

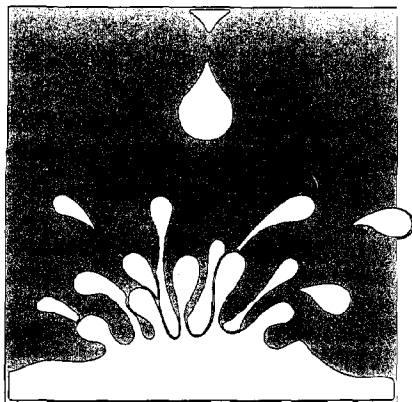
2. EPA and the Corps of Engineers published interim final guidelines in the *Federal Register* on September 5, 1975. Titled "Navigable Water, Discharge of Dredged or Fill Material," the guidelines deal with the threat to water quality and the aquatic environment by proposed discharges of dredged or fill materials and explain ways to prevent or minimize such damage through the permitting process.

3. The corps' Miscellaneous Paper D-76-17, "Ecological Evaluation of Proposed Discharge of Dredged or Fill Material into Navigable Waters, Interim Guidance for Implementation of Section 404 (b) (1) of Public Law 92-500 (Federal Water Pollution Control Act Amendments of 1972)," is an interim manual on the testing procedures specified in EPA guidelines to determine the relative acceptability of dredged or fill material for disposal into United States waters.

An additional document published by EPA in the *Federal Register* on October 14, 1973, is "Ocean Dumping Final Regulations and Criteria." These criteria (currently being revised) apply to the discharge of dredged material into the ocean. The EPA final guidelines for Section 404 will be compatible with the criteria for ocean dumping of dredged material.

In an effort to make the 404 program manageable, environmentally protective, and minimally cumbersome, a new general permitting system is being implemented. This system will reduce the time required to initiate acceptable operations for discharging dredged or fill material. It will also minimize the effort required to process permits and to ensure that local conditions and state controls are taken into consideration. General permits are issued at the district engineer level. The public may comment on the kinds and form of general permits being considered; comments should be directed to the district engineer and to the responsible EPA regional office.

At the present time, there is a critical need for new information on the importance of wetlands to the aquatic environment, along with other information related to the discharge of dredged or fill materials. Significantly, the U. S. Fish and Wildlife Service has begun a wetland inventory and a classification inventory and analysis of fish and wildlife habitats. Both could make a major contribution to the widespread public acceptance and support of the Section 404 program. Many parks are undisturbed ecosystems where the contribution of wetlands to the aquatic environment can be observed by trained ecologists year-round, and where the visiting public can be informed of the findings. Information from such programs usually spreads through the recreational community and can be applied to other parts of the natural environment used for park and recreation purposes. □



An Offer Too Good to Refuse

by Nathaniel P. Reed

AN OFFER to right the past wrongs committed against the waters of the United States, to restore and maintain their chemical, physical, and biological integrity, is an offer too good to pass up. The enactment of the Federal Water Pollution Control Act Amendments of 1972 represented public recognition that our nation's economic growth could no longer continue at the expense of our nation's waters. We have gained industrial and economic prominence throughout the world due to our almost single-minded dedication to the exploitation of our natural resources. Words from a William Wordsworth poem ring true:

*The world is too much with us; late and soon,
Getting and spending, we lay waste our powers;
Little we see in nature that is ours;
We have given our hearts away, a sordid boon!*

In more recent years we have witnessed a revival of a sense of stewardship in relation to our natural resources. Our elected representatives at the local, state, and federal levels of government have reflected this renaissance through land-use planning requirements, zoning controls, strip-mine reclamation standards, environmental impact assessments, endangered species protection, and other measures. For the sake of those who follow us in this country and the world, a sense of stewardship must become the dominant reality.

The water pollution control act epitomizes this new spirit. It requires that in our use of the nation's waters, we be custodians and restore them to their proper role in the natural system. The act does this in a number of ways: a set of

enforceable national standards for clean water are established; permits are required for discharges from point sources; dredge and fill activities are subject to review and permitting; areawide, state, and regional planning systems to achieve long-term water quality are called for; and federal funds are made available to finance construction of sewage treatment plants.

The assistant secretary for fish and wildlife and parks, in the U.S. Department of the In-

NATIONAL PARK SERVICE PHOTO

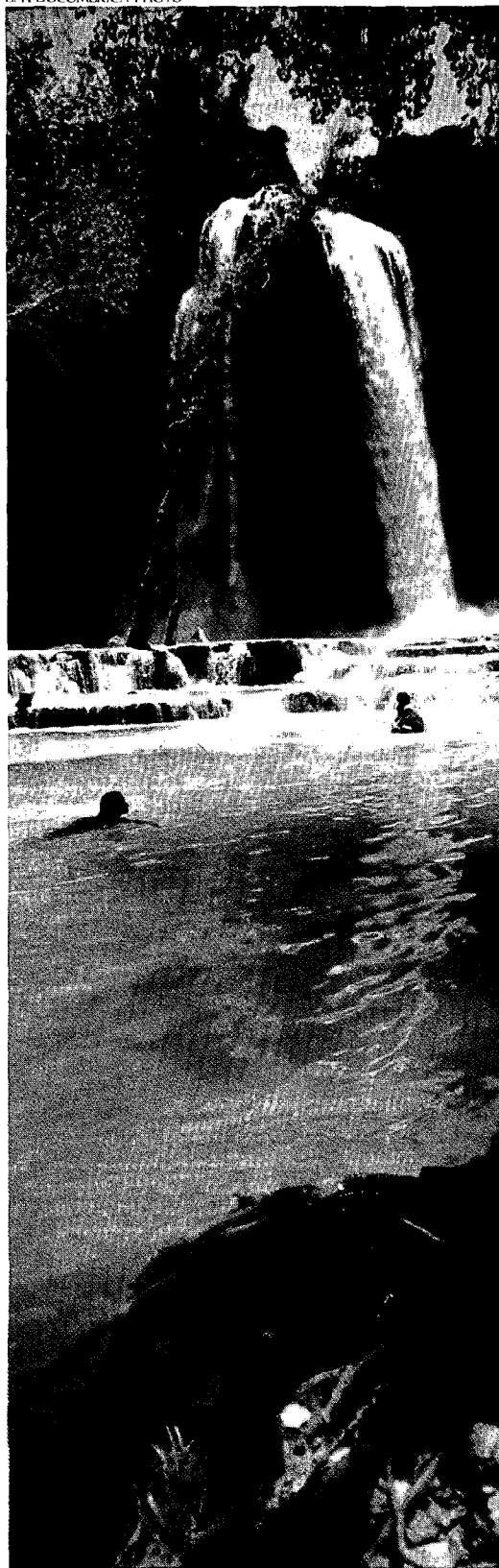


All species of wildlife are dependent on clean water.

terior, has responsibility for the Bureau of Outdoor Recreation, the Fish and Wildlife Service, and the National Park Service. Of particular interest to the missions of these agencies is "the national goal that wherever attainable, an interim goal of water quality which provides for the protection and propagation of fish, shellfish, and wildlife and provides for recreation in and on the water be achieved by July 1, 1983." While frequently thought of as the Environmental Protection Agency's act—and in fact the major por-

Mr. Reed is the Interior Department's assistant secretary for fish and wildlife and parks.

EPA-DOCMERICA PHOTO



The traditional "old swimming hole" could again become commonplace under the clean water programs.

tion of it is administered by EPA—the quoted national goal falls clearly within the objectives of these three Interior Department agencies.

The full potential of the water pollution control act to assist the Bureau of Outdoor Recreation, the Fish and Wildlife Service, and the National Park Service in achieving their programs is only just being realized. As with many other pieces of complex or novel legislation, one or two far-sighted legislative drafters may recognize the implications of their words, but the blurred vision of the public at large and the government agencies affected may not come into focus for months or years following enactment.

For instance, national parks are more and more frequently being affected by actions occurring beyond their boundaries and their direct statutory authority to control. Historically, park superintendents have understandably been reluctant to address problems beyond park boundaries, having no statutory basis on which to rely. Impacts to park resources arising from adjacent state or private lands may have been objected to verbally, but with limited success. Typically, the only direct means for confronting the problem has been to buy out the problem through land acquisition at large costs to the taxpayers and loss to local communities of the important property tax base.

Now, through the areawide waste treatment management planning process (Section 208) and the water quality standards (Section 303), this historical approach is changing. Both sections permit and encourage agency participation. Through park service participation in these processes, standards can be set and management plans developed at the state and local levels which will contribute directly to protection of national park resources. Thus, an alternative to land acquisition is available to address impacts arising beyond park boundaries. So now the opportunity exists to work with local and state governments to resolve the adverse impacts caused by residential, industrial, and agricultural development in Taylor Slough at the east boundary of Everglades National Park, timber harvesting adjacent to Redwoods National Park, and industrial and urban waste management at Cuyahoga Valley National Recreation Area.

The recreation goal of the act provides a major catalyst for the programs of the Bureau of Outdoor Recreation. How long has it been since the brooks, streams, ponds, and lakes of this country were fertile waters for the imaginations of our children—the future fishermen, civil engineers, and ship captains of the country—as they played at catching crawfishes, building miniature water impoundments, or floating sticks through tortuous navigation channels.

Through planning and funding assistance, the Bureau of Outdoor Recreation can assist states and localities to bring people back to the water for recreation.

Section 201 of the act calls for waste treatment management which combines open-space and recreational considerations. The bureau's capabilities interface nicely with local communities' needs for sewage treatment and recreational facilities. Imaginative planning can result in sewage treatment pipeline rights-of-way being utilized for bike paths or horse trails, abandoned treatment plants becoming valuable recreation centers, and improved public access to riverfront picnic and bathing areas. Already integrated waste treatment centers planned as environmental education centers are on the drawing boards. The opportunity is there for those imaginative enough to seek it out. The potential is endless.

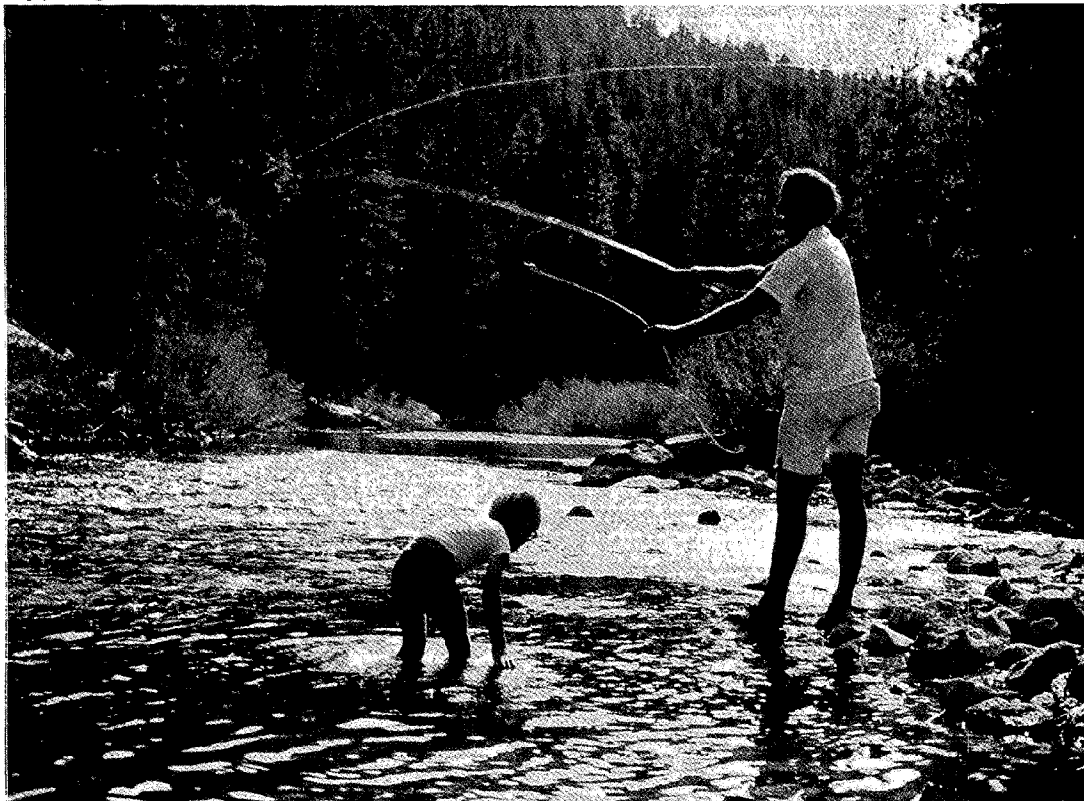
Input from the Fish and Wildlife Service into the EPA pollution discharge permit program (Section 402) and the Corps of Engineers dredge and fill permit system (Section 404) can produce valuable fish and wildlife benefits. Such benefits have obvious implications for recreation. Improved water quality in Atlantic coastal rivers should result in the return of anadromous fish to once renowned New England sport fishing waters. Curtailment or modification of some

wetland development projects will produce dividends for fish, wildlife, and recreation, not to mention water quality. Participation by the Fish and Wildlife Service in establishing water quality standards which provide for the protection and propagation of fish, shellfish, and wildlife under Section 303 will produce tremendous benefits for a host of interested segments of our society.

A closer examination of the programs being pursued by the Bureau of Outdoor Recreation, the Fish and Wildlife Service, and the National Park Service under the act will show the progress that has been made and the work that remains to be done. Specific examples give a glimpse of the potential benefits to be achieved. Opportunities for public involvement are legion and encouraged.

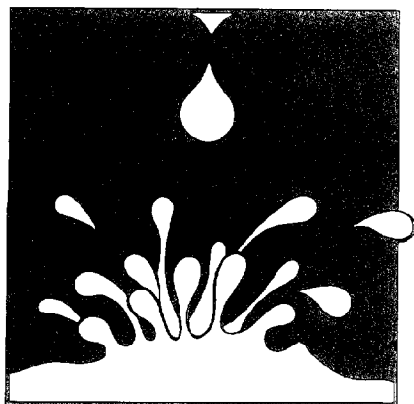
The Federal Water Pollution Control Act was enacted in recognition of the undeniable reality that the nation's waters have a multitude of functions to serve. Short-sighted and indiscriminate dedication to limited goals can only preclude the benefits to be derived from these many functions. The nation must seize upon the renewed sense of stewardship to bring the works of man into harmony with the natural system. The opportunity is there for the public and government agencies. It is an opportunity we cannot afford to refuse. □

Fly fishing in northern Nevada: our waters must be protected for such opportunities.



EPA-DOCUMERICA PHOTO





BOR Looks at Water Quality

by George M. Kyle

Many recreational sites can be acquired through local initiatives prior to escalation of real estate prices expected to accompany the cleanup of rivers, lakes, and estuaries.

THE WATER Pollution Control Act Amendments of 1972 are beginning to produce side benefits beyond the imagination of water pollution control program creators. And although the four-year-old legislation already is demonstrating decided impacts on public recreation, full potentials for the future may just now be beginning to be recognized.

In a number of locations, wastewater spray now irrigates the beautiful landscapes of golf courses and urban parks.

Mr. Kyle is assistant, Office of Communications, Bureau of Outdoor Recreation, Washington, D.C.

In some areas, waste treatment ponds provide waterfowl resting and feeding areas and places for public fishing.

In some instances, play spaces, tennis courts, and other recreational areas utilize the covers of water storage tanks and sewage treatment facilities.

In many locales, "No Swimming" signs are coming down along public shorelines.

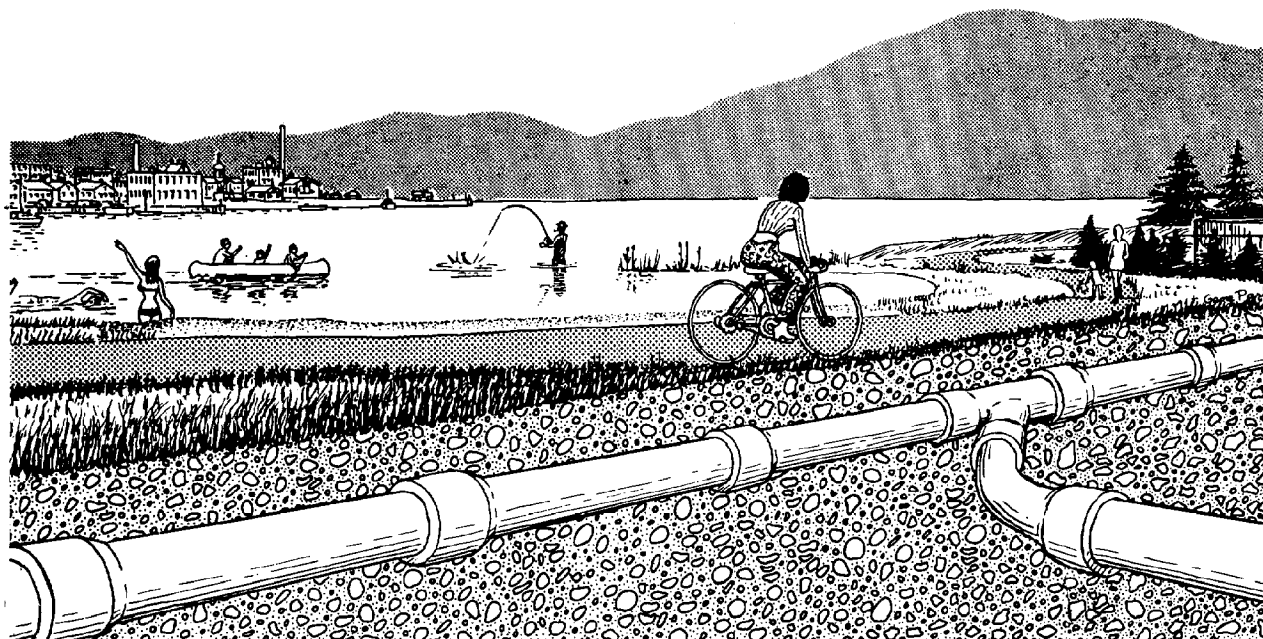
Urban waterfronts denied to a whole generation by commercial uses, polluted water, and the careless castoffs of an urban society may one day return to their status as fishing holes and swimming areas.

Streams sickened by decades of abuse may brighten and revive so that they sparkle to the delight of young and old as they once did.

The stigma of sewage treatment sites may be removed by new techniques, improved plant designs, and enlargement of plant locations.

Trunk sewer line rights-of-way may become recreation ways of the future for cycling, hiking, horseback riding, snowmobiling, and cross-country skiing.

Disjointed and fragmented park systems one day may have interconnecting passageways and public access along sewerage networks now being planned to relieve pollution.



NATIONAL PARK SERVICE PHOTO

However, these benefits are not entirely automatic. They require the cooperation and coordination of water pollution specialists, fish and wildlife experts, and recreation professionals. Following is a brief summary of some of the ways the Bureau of Outdoor Recreation and other organizations can work together to help realize the recreation potentials in certain sections of the water pollution control act.

Under section 201, the bureau can play a constructive role in implementation by providing technical assistance early in the planning process.

BOR, with the help and cooperation of state and local park and recreation interests, can provide information concerning the conservation and utilization of land and water for outdoor recreation; provide planning assistance for recreation development, shoreline protection, and easement negotiations; encourage states revising Statewide Comprehensive Recreation Plans to include public outdoor recreation elements as part of water pollution control plans and projects; make available to state recreation planners and others current data on water cleanup; and seek out private interests to help develop strategies which include outdoor recreation and streambank preservation in water cleanup efforts.

Under some circumstances, Land and Water Conservation Fund (LWCF) monies administered by the bureau may be made available for acquisition and development of recreation lands and facilities adjacent to waste treatment sites.

Section 208 of the act does not mention open space or recreation. However, identification of areas, areawide planning for water cleanup, and establishment of a continuous pollution control planning process give opportunities for planning and coordination to assure maximum public recreation benefits. The result can be increased outdoor recreation opportunities and improved fish and wildlife habitat.

BOR regional offices have established working relationships with EPA planning agencies, state liaison officers to the bureau, state water

agencies, and many local and private organizations and agencies interested in water pollution control.

For example, on September 16, 1976, the Lake Central Regional Office of BOR met at Chicago's O'Hare Airport with federal and state water quality program and recreation officials in a meeting on coordinating recreation and water quality programs.

Highlighted at the meeting were discussions on sewage treatment plant sites; spray-irrigation type facilities; recreational community gardens; golf courses; picnic areas; playgrounds; archery courses; and physical fitness trails.

BOR regional offices have established working relationships with EPA planning agencies, state liaison officers to the bureau, state water agencies, and many local and private organizations and agencies interested in water pollution control.

Meeting participants exchanged information on the various ways states must participate to make the programs a success, including:

- Review past and current section 201 grants to identify open-space and recreation opportunities at treatment facility sites and along river corridors showing significant improvement.
- Urge consultants to consider recreation and open space.
- Coordinate state 208 planning with state recreation planning.
- Urge designated 208 agencies at all levels to consider recreation and open space in areawide plans.

The meeting revealed that in addition to LWCF financial assistance, BOR can provide technical assistance such as information on multiple-use; conceptual planning; preparation of leases and other less-than-fee title instruments; seeking out private sector aid; coordination with Statewide

Comprehensive Outdoor Recreation Planning; and reviewing and commenting on section 208 plans.

The meeting also spotlighted some other possible sources of financial aids for recreation-waste treatment facility projects, including: Pittman-Robertson, Dingell-Johnson funds for wildlife and fisheries; coastal zone management beach access funds; Department of Housing and Urban Development community development funds; federal revenue sharing funds; and private donations of funds.

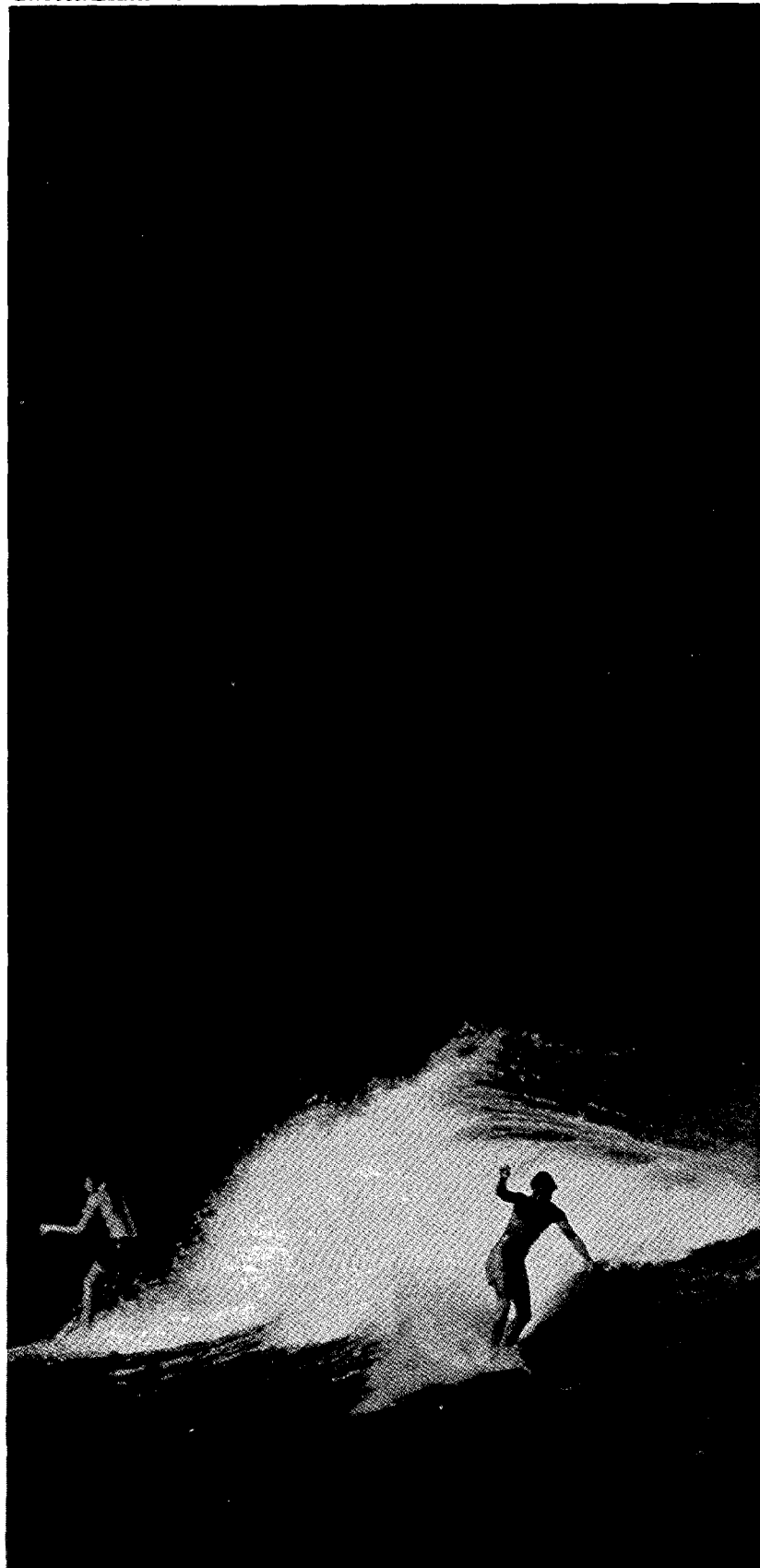
Section 303 of the act assures that high water quality standards will be set by the states or the Environmental Protection Agency. When adequate standards are met, many miles of shoreline, urban waterfronts, and untold acres of open waters may provide water contact recreation, fishing, and other public recreation benefits.

Setting water quality standards is essential in the maintenance of recreation resources. A standard provides for designating the uses to be made of a water body and establishing criteria which will permit and protect those uses. Making certain that recreation is a designated use is a vital first step.

Both BOR and the Fish and Wildlife Service have contacts with state counterpart agencies which must play a role in this process. EPA expects the bureau and the service to make the state agencies aware of the urgent need to set appropriate standards and to furnish information on the recreation and fish and wildlife benefits to be derived from clean waters.

As is the case with the other sections of the act, technical assistance, coordination, and deliberate cooperation are possible through the EPA, BOR, National Park Service, and the U.S. Fish and Wildlife Service.

Section 404, which extends longstanding responsibility for dredge and fill permits to the Corps of Engineers, provides protection of some recreation areas and wide expanses of spawning waters, nursery grounds, and choice fishing waters. Under an agreement, the U.S. Fish and Wildlife Service screens permit



applications and refers those affecting public recreation areas to the Bureau of Outdoor Recreation for review and comment.

The EPA programs under all four of these sections of the act afford an excellent opportunity to help meet recreation needs, particularly in urban areas. They provide the vehicle for identifying recreation resources and coordinating government actions in land acquisition and facility development both with and without Land and Water Conservation Fund assistance. With judicious planning, many recreational and open-space sites can be acquired through local initiatives prior to escalation of real estate prices expected to accompany the cleanup of rivers, lakes, and estuaries.

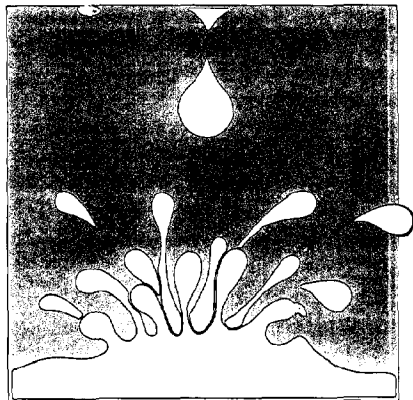
If the recreation community does nothing, the massive nationwide waste treatment program will still accrue multiple benefits to existing water-related parks and outdoor recreation areas. Water quality in streams and lakes will improve; but, hundreds of miles of rights-of-way, many plant sites, and capabilities for irrigation and fertilization will go unused.

Stream bank and shoreline properties will increase in value and unless devoted to public recreation and open space, will be converted to industrial, commercial, or housing developments and uses. Improved sewage treatment and extended systems very soon will accelerate the trend towards these uses.

The need for the cooperation and participation of park and recreation professionals throughout the United States is urgent. Otherwise, public park, recreation, and open-space potentials of one of the most massive construction programs ever mounted in this country will be lost by default.

The opinions and events contained in this article represent those of the author and do not necessarily represent the policy and positions of the agency with which he is employed.

Opportunities for water-contact recreation will be protected if high water quality standards are set and met.



Success Stories in Multiple-Use

by Thomas L. Gilbert

THE CONSTRUCTION of wastewater treatment facilities and sewers by cities, towns, and sewer districts offers an opportunity to secure open space and recreational access to our waters. Section 201 of Federal Water Pollution Control Act Amendments of 1972, which authorizes grants-in-aid for construction of such facilities, directs the administrator of the Environmental Protection Agency (EPA) to "encourage waste treatment management which combines 'open space' and recreational considerations with such management." The Bureau of Outdoor Recreation and EPA are working together to implement this concept. Since this joint effort was launched just over a year ago, many opportunities for coordinating recreation and water quality programs have surfaced. Several examples will serve to illustrate the potential.

The Franklin Environmental Control Complex, in Franklin, Ohio, is a regional resource recovery system located on a 230-acre site along the Great Miami River. The complex includes three facilities: a wastewater treatment plant, a solid waste recovery and disposal plant, and a facility for treating liquid industrial wastes.

The Miami Conservancy District, which operates the wastewater treatment plant, has proposed developing the entire site as an environmental awareness center. The proposal includes an outdoor classroom, water quality monitoring stations on the Great Miami River,

an area demonstrating proper floodplain management, and other facilities. An existing structure on the site would be converted into an interpretive center.

An 11-acre portion of the site adjacent to a residential area would be developed as a neighborhood park. Presently, the only recreational use of the site is community gardening.

Another opportunity for obtaining recreational benefits from water cleanup programs was demonstrated in Miamisburg, Ohio, a suburb of Dayton. An abandoned sewage treat-

ment plant had become a neighborhood eyesore. Citizens asked city officials to remedy the situation. Because recreation facilities were badly needed in that part of the community, conversion of the site into a neighborhood park became the solution. The city successfully sought financial assistance from the Land and Water Conservation Fund and with this aid dismantled existing structures and constructed Westover Park.

Citizens and city officials worked together to design the park, and

The San Antonio River area of Texas: multiple-use at its best.



RONALD THOMAS PHOTOS

Mr. Gilbert is outdoor recreation planner, Lake Central Region, Bureau of Outdoor Recreation, Ann Arbor, Michigan.

some existing structures were included in the final plan. An adventure playground was developed on the mound which contained the digester. The aero-clarifier became a splash pool and roller skating area. Sludge beds were filled in and paved for tennis, basketball, and volleyball courts. Incorporation of these structures in the design resulted in financial savings for the city.

A similar opportunity for converting abandoned sewage treatment plants into parks exists in Naperville, Illinois. Construction of a new regional wastewater treatment plant led to the abandonment of four small treatment plants along the west branch of the DuPage River. The abandoned plant sites would fit nicely into the Naperville Park District's plan to establish a greenway along the river. As in Miamisburg, a large trickling filter and control buildings at the Naperville sites could be converted for recreational use.

Buffer lands around Naperville's new regional wastewater treatment plant have been leased to the Naperville Park District for recreational

use. The district provides community gardening plots on this land and is constructing a canoe access site on a portion of the land abutting the west branch of the DuPage River.

A different type of opportunity to coordinate water cleanup and recreation presented itself in Muskegon County, Michigan. Muskegon County treats its wastewater by spray-irrigation. This is accomplished on an 11,000-acre site about 10 miles east of the city of Muskegon. Sewage from the city is piped to the site, where it passes through aeration and settling ponds. The effluent from these ponds goes to one of two 850-acre holding lagoons or is immediately distributed to the 54 spray fields. The large irrigation rigs spray in a circular pattern, leaving islands of trees and other vegetation.

In 1975 the county produced a \$600,000 cash corn crop on the site. This greatly helped offset operating expenses.

With islands of trees scattered throughout the site, more than 5,000 acres of corn, and two 850-acre ponds, it is not surprising to find that

there is abundant wildlife at the site. This prompted the Muskegon County Board of Commissioners to begin an experimental hunting program. In cooperation with the Michigan Department of Natural Resources, a portion of the site was opened for rabbit hunting during the month of February 1976. However, unfavorable weather caused a poor turnout. The county plans to repeat the program and expand it if it proves successful.

Other activities, such as hiking and environmental education, could possibly be accommodated on the Muskegon County site. Since spray operations cease during the winter, snowmobiling may also be appropriate.

Another unusual opportunity exists in the Chicago area. Most of the wastewater generated in Cook County is treated by the Metropolitan Sanitary District of Greater Chicago. The district operates a system of three canals in the Chicago area for sanitary and shipping purposes. As the sanitary district improves its collection and treatment operations, pollution of

The Pacifica Pier in California was constructed over a treated wastewater outfall line. Last year it was used 50,000 times for recreation.





Rock probes use an archaeological site which was discovered in a proposed right-of-way along the Chattahoochee River in Georgia.

the canals is decreasing and vacant land along the canals, which is owned by the sanitary district, is becoming more desirable for recreation.

The sanitary district has already made some of its land along the canals available for recreational use. An ecology center and arboretum in the city of Evanston are located on sanitary district land. The Chicago Park District has developed recreation facilities on some canal lands within the city of Chicago.

While the Metropolitan Sanitary District has been generous in leasing its lands for recreational use, much land with excellent recreation potential still remains unused and vacant. Some of this land lies immediately adjacent to existing Cook County forest preserves. Dedication of these lands for public recreation would help meet the tremendous recreational space needs of the Chicago area.

Sludge which results from the sanitary district's operations is transported to Fulton County, west of Peoria, where another unique opportunity exists. The district owns 16,000 acres of land in Fulton County, much of it strip-mined. The land is being reclaimed by the district through land application of sludge. Sludge stored in lagoons on the site is

distributed to the various fields for application to the land.

Some of the land is not suited to application of sludge. Approximately 3,000 acres have been zoned for recreation. Four hundred acres have been leased to Fulton County for a park. The county has developed facilities for camping, picnicking, and fishing.

One of the best examples of coordinating water cleanup and recreation programs can be found in Bellevue, Washington, a suburb of Seattle. Mercer Slough is an undeveloped swampy area that is being acquired with assistance from the Land and Water Conservation Fund. The proposed construction of a sewer interceptor line along the west edge of the site is being coordinated with recreation officials so that the right-of-way will be left properly graded for paving as a bikeway. When the project is completed, bicyclists using the new facility will travel along scenic natural areas.

These examples illustrate some of the many and varied opportunities for coordinating outdoor recreation with water pollution control programs. Although some of them have been unique, aspects of them will be found applicable to many situations.

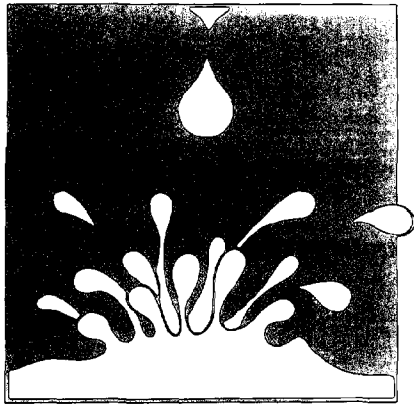
Whether the public recreational value of water pollution control pro-

grams is realized will depend to a large degree on the initiative of the park and recreation professional. Wastewater treatment authorities, because of their particular training, may not recognize the recreational value of their operations and facilities.

If the public is to receive the full benefit from its investment in clean water, park and recreation officials must familiarize themselves with their local and regional water pollution control programs and become involved early in the planning process for new facilities. The increased recreation value of the lands downstream from a new facility should be considered. At the same time, the multiple-use of existing facilities and the availability of abandoned facilities should be investigated.

The value of clean water to outdoor recreation goes without saying. The park and recreation profession should therefore support water pollution control programs. It should also realize it has a responsibility to ensure the public's right to enjoy the recreational benefits of clean water.

The opinions and events contained in this article represent those of the author and do not necessarily represent the policy and positions of the agency with which he is employed.



A New Life for the Monongahela

by Paul W. Weiser

During the first half of this century, the Monongahela became one of the most heavily industrialized rivers in the world. Extensive coal mine drainage eliminated fish populations and most human-contact uses of the river from Fairmont, West Virginia, to Charleroi, Pennsylvania. Today, the river is regarded as an irreplaceable recreation resource.

IN JULY 1976, the Department of the Interior presented an Outdoor Recreation Achievement Award to the Borough of Charleroi, Pennsylvania. The award commended the borough's extraordinary program to clean up its riverfront along the Monongahela River.

Charleroi's recreation program, based on extensive public volunteer work, multiagency cooperation, and industry assistance, is similar to the efforts of a dozen or so other Pennsylvania and West Virginia communities along the river.

During the first half of the twentieth century, the Monongahela became one of the most heavily industrialized rivers in the world. Extensive coal mine drainage eliminated fish populations and most human-contact uses of the river from Fairmont, West Virginia, to Charleroi. Heavy industrial development between Charleroi and Pittsburgh turned the Monongahela into a biological desert.

Cleanup of the river began in earnest in the 1960s when mine drainage prevention, control, and acid neutralization became requirements for all mine sites. Efforts to

restore the river came from a number of sources.

An Ohio River Basin Commission study combined the efforts of the U.S. Geological Survey, the Bureau of Outdoor Recreation, the U. S. Fish and Wildlife Service, and other agen-

cies. Much credit goes to the West Virginia Department of Natural Resources, the Pennsylvania Department of Environmental Resources, the Pennsylvania mining industry, and the Environmental Protection Agency.

The Monongahela riverfront at Charleroi as it looked in June of 1974.



BUREAU OF OUTDOOR RECREATION PHOTO

Mr. Weiser is outdoor recreation planner, Northeast Regional Office, Bureau of Outdoor Recreation, Philadelphia.





BUREAU OF OUTDOOR RECREATION PHOTOS

Left top: Cleanup work begins on the Monongahela shoreline in August 1974. **Left bottom:** In July 1975, cleanup crew members relax after a day's work and prepare for the upcoming fishing contest. **Above:** Proud winners in the "largest carp" division. The contest was held in August 1975.

The commission's final river basin water resources study recommended further intensive evaluation of the Monongahela's recreation potentials. Pennsylvania's Statewide Comprehensive Outdoor Recreation Plan recommends a thorough recreation study of the river, now regarded as an irreplaceable resource. The U. S. Army Corps of Engineers has begun preliminary planning for navigation improvement along the lower river.

The Environmental Protection Agency recently released a water quality success story entitled "A Cleaner Monongahela River." The Pennsylvania Department of Environmental Resources in September 1975 cooperated with the Corps of Engineers to host a boat tour for the Ohio River Basin Sanitary Commission and many other guests.

West Virginia and Pennsylvania communities fronting on the river noted improvement of water quality and extraordinary increases in fish populations.

Groups such as the Jaycees, Girl Scouts, Boy Scouts, and Comprehensive Employment and Training Act workers financed by the U. S. Department of Labor joined forces with recreation officials. Cleanup of riverfront areas, fish stocking by the state, and the addition of beaches, boating access, picnic sites, and other facilities prepared the way for annual fishing competitions and other recreation activities.

The Guttman Oil Company provided a barge in 1976 to be used as a dock at Charleroi for a Bicentennial ball. Irely Construction Company set up tents and provided electrical lighting along the riverfront. High school youths prepared paper luminaries along shoreside paths.

The Mid-Monongahela Valley Council of Governments has cleared debris along the river at Roscoe, Dunlevy, Spears, Allenport, Stockdale, Rostraver, and Charleroi.

The city of Monongahela has an "Aquatorium" used for concerts,

dances, and large tourist boat embarkations. Donora plans waterfront renewal to include fishing, boating, and picnicking; Monessen, which led the way with the first fishing contest in 1974, uses private waterfront by permission from the American Chain and Cable Company. Youths crowd the river bank at Allenport's old swimming hole, which is equipped with rope swing.

The Borough of California received 14 acres of floodplain from Jones and Laughlin Steel Corporation for recreational use. At Morgantown, West Virginia, the 75-acre Core Arboretum extends for three-quarters of a mile along the river. Near Fairmont, Pricketts Fort State Park has been in operation since June 1976. Nearby marina facilities give access to the undeveloped upper reaches of the river.

Greatly impressed by all the local activities, improved water quality, and fish population restoration, the Pennsylvania Fish Commission hopes to provide boating access at least every 10 miles along the river.

The only stretch of the Monongahela which has not shown remarkable recovery is the 30 miles between the river mouth at Pittsburgh and New Eagle. However, there are heartening signs. EPA's studies 10 miles above Pittsburgh at Locks and Dam 2 yielded 20 fish in 1967, 261 in 1970, and 869 in 1973. Upstream increases were much greater.

Already, impressive projects anticipate a healthy river. Point Park in Pittsburgh's Golden Triangle area, a "River Museum" across the river, a Jones and Laughlin Steel Corporation park lining both river banks four miles upstream, and several other recreation areas, historic site restorations, and boating access sites are completed or underway.

The point of the Monongahela success story is that private, local, and state actions are required if park and recreation benefits of water quality improvement programs are to be made available to the public.

The opinions and events contained in this article represent those of the author and do not necessarily represent the policy and positions of the agency with which he is employed.

An Honorable Discharge for the Biggest Pollutant

by John Crowder

IN A RECENT CASE involving a violation of the Federal Water Pollution Control Act, the judge described the act as "an admirably comprehensive piece of legislation." Those who take the time and trouble to read the act from cover to cover—all 89 pages of it—would probably agree. Those who try to read *and* understand it all would very likely agree that it is also a pretty complex statute.

A good defense can be made for the size and complexity of the water pollution control act if one considers the enormity of the problem it is designed to correct. The water pollution problems of the United States in the twentieth century are the cumulative result of decades of unawareness and unconcern. We encouraged an energy- and materials-hungry technology to grind, burn, shred, fabricate, smelt, distill, plate, roll, stamp, pulverize, refine, render, dredge, fill, dump, and pump an incredible profusion of material and synthetic substances as we converted them to the industrial and consumer products we demanded for our version of the "good life."

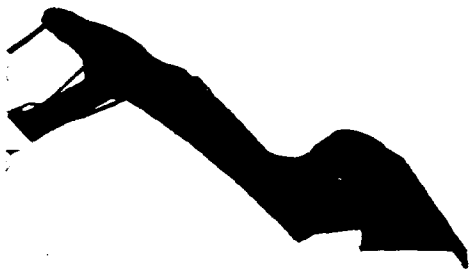
But in the last decade or two our comfortable illusion of a technologically fabricated Eden began to crumble. We realized that only *some* of the products of factories, mills, and power plants moved down assembly lines, rolled out onto loading docks, or sped across the landscape on singing wires; that, other, less attractive products belched from smokestacks and gushed from discharge pipes. We realized that along with many useful and desirable goods, we also produced an enormous outpouring of unpleasant, unsightly, foul, noxious, and frequently poisonous products that did not "just go away." We had vastly exceeded the capacity of many of



our material systems to dilute, absorb, or break down the tide of filth that we discharged into them. We realized that we were losing one of the most precious and indispensable elements of the "good life"—a clean, esthetically appealing, biologically viable, high-quality natural environment.

As we studied the problem of water pollution more intensively, we became aware that it was not only the end-of-the-pipe discharges of sewage and industrial wastes that were fouling our oceans, lakes, and streams. There were other pollutants, perhaps not so obnoxious in their effects, but which also can be enormously disruptive and destructive to living aquatic systems and to the human satisfactions those systems provide. There were the phosphate-based detergents that overfertilized many of our lakes into odoriferous algal soup; the contaminated flows of storm water runoff from urban streets, conveying tons of suspended and dissolved pollutants into nearby surface waters with each heavy rain; hot water (thermal) discharges from power plants, potentially disruptive to the feeding, breeding, and migratory behavior of fish and other aquatic animals. There were mine drainage problems and pesticides to be dealt with.

Mr. Crowder is chief, Branch of Federal Permits and Licenses, U.S. Fish and Wildlife Service, Washington, D.C.



Among all of the specialized water pollution problems was one which might almost escape detection in a casual or hurried reading of the water pollution control legislation. This is the problem of how to deal with the vast amounts of dredged and fill materials generated annually, largely in the process of constructing and maintaining navigation systems and other activities of water resource development and modification.

Dredged and fill materials do not quite fit the popular concept of pollution. Usually they consist predominately of earthen substances—silt, clay, sand, and rock or some combination of these. These are substances which occur in many forms and arrangements throughout the material world. They can, however, become pollutants when they are relocated within the environment in a way that damages the normal functioning of ecosystems or when they become a medium for the transfer of contaminants absorbed or mixed with them.

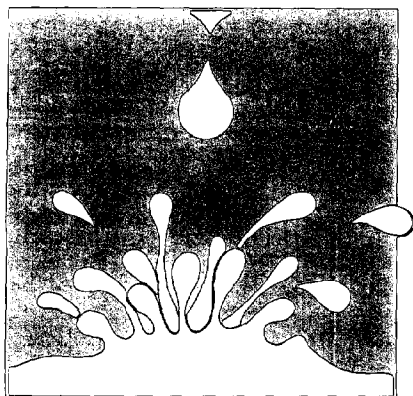
Filling a tidal salt marsh with dredged materials, for example, destroys one of nature's most productive natural systems. Small amounts

of fill material, strategically placed across a stream, can cut off upstream access to migrating fish such as trout and salmon, thus preventing them from reaching their spawning grounds. Even when dredged or fill material is placed upon the unvegetated or "bare" bottoms of lakes or bays, it can smother myriads of burrowing, creeping, and crawling creatures upon which fish and other animals feed. Such environmental insults reduce the capacities of natural aquatic systems to perform useful, enjoyable, and valuable functions for man.

These physical impacts, as destructive as they are, can become even worse if the dredged or fill material is contaminated by toxic or distasteful substances—such as sewage, oil, grease, heavy metals (mercury, cadmium, etc.), pesticides, hydrogen sulfide—or highly organic materials, with a high demand for dissolved oxygen. Contaminated sediments lying undisturbed at the bottom of a lake or river may be relatively harmless. But the agitation and suspension of these sediments by dredging, transporting, and dumping them into some other part of the water body can liberate massive doses of associated toxicants and cause widespread losses of fish and other aquatic animals. Fortunately the majority of dredged and fill materials are not of this type, but when they are, the task of handling them safely can be a real challenge to engineers and environmentalists.

Perhaps the single most astonishing aspect of the dredged and fill materials problem is the sheer volume of material that is processed. If we consider dredged material alone and limit our consideration only to that portion of it which is dredged to maintain and improve navigation, we find that some 450 million cubic yards are dredged from United States rivers and harbors annually at a direct cost of about \$250 million.

Given the possible environmental consequences, it is obvious that the discharge of



dredged or fill materials into the waters of the United States is a matter which should not be treated lightly. The Congress, in drafting the water pollution control legislation, acknowledged the need for regulating these activities. The regulation process is defined in Section 404 of the act, which states: "The Secretary of the Army, acting through the Chief of Engineers, may issue permits, after notice and opportunity for public hearings for the discharge of dredged or fill material into the navigable waters at specified disposal sites." The act goes on to specify that sites for disposal of such material are to be specified on the basis of guidelines developed by the Environmental Protection Agency.

This federal permit process accomplishes several things. It provides a means for all sectors of the public to be notified of proposals for dredged or fill materials discharges and to make their views known to the Corps of Engineers, the agency charged with administering the permit program. Through the EPA guidelines, and also through the Corps of Engineers' own permit regulations, it provides a systematic process for evaluating the environmental, economic, and other social costs and benefits that are related to the problem of dealing with dredged and fill materials.

Through this permit process, the Fish and Wildlife Service, National Marine Fisheries Service, and state wildlife resource agencies are provided a means for making appropriate recommendations to reduce or avoid harmful environmental impacts of filling and dredged materials disposal in the waters of the United States. In performing their obligations within this program, these agencies act in accordance with the Fish and Wildlife Coordination Act. That law requires anyone proposing to perform water resource modifications, under federal permit or license, to consult with these agencies "with a view to the conservation of wildlife resources by preventing loss or damage to such resources as well as providing for the development and improvement thereof."

Within their roles in the Section 404 permit process, all federal agencies are required by the National Environmental Policy Act of 1969 to "study, develop, and describe appropriate alternatives to recommended courses of action in any proposal which involves unresolved conflicts concerning alternative uses of available resources."

Thus through the Section 404 permit process, proposals for dredged and fill materials are closely studied with a view to anticipating environmental impacts and to finding ways of protecting fish, shellfish, wildlife, and their habitats; recreational opportunities; and the overall quality of the nation's waters. This does

not mean that all ecologically destructive discharges will be prohibited; but it does mean that unnecessarily destructive discharges will be discouraged.

It means that no longer will the cheapest, most convenient solutions be automatically chosen when planning for disposal of dredged or fill material. It may mean, for instance, that instead of dumping polluted dredged material in open water, a permit applicant may be required to construct a confined disposal site on dry land and carefully control the drainage and seepage from the site.

There are some forms of development that represent inappropriate uses of fill material. The Fish and Wildlife Service, for example, discourages the filling of productive open waters, wetlands, and shallows for projects that do not really require a waterfront site. One such unnecessary use is homesite construction in wetlands. Many thousands of acres of our most productive coastal salt marshes have been forever destroyed by filling in shallow bays and marshes to construct residential subdivisions. Does it make good sense to destroy these wetlands and forfeit their productivity, when houses and roads can be built elsewhere?

Fortunately, this destructive pattern of building subdivisions in wetlands is being replaced by the more ecologically sensible strategy of placing homesites on naturally high ground and building marina facilities to accommodate the navigational needs of homeowners. Some damage to wetlands may result from the marina construction, but far less than would occur from filling large areas of wetlands to create waterfront property.

Some specific social benefits of this alternative design are the preservation of wetland aesthetic values and of their productivity of sport and commercial fish and other wetland-associated wildlife. Among the beneficiaries are fishermen, hunters, birdwatchers, nature photographers, and other users of the wetlands. And among those who benefit most are the homeowners who will have more fish to catch and more natural scenery to enjoy.

Dealing with dredged and fill material is not always as cut-and-dried as this example may suggest. Often extremely difficult choices must be made involving tradeoffs between environmental quality and other social objectives. Section 404 offers a rational basis for making these choices and provides the opportunity to find an "honorable discharge" for the biggest pollutant of all. □

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An Open Tap for Taylor Slough

by L. Lee Purkerson and Duncan Morrow

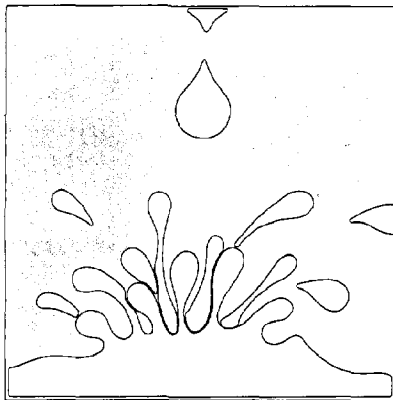
THE EVERGLADES National Park in Florida does not contain all of the famous "river of grass" called the Everglades, the vast reaches of which have been for more than a century the target of men interested in using the land for agriculture and industry.

The National Park Service must work in concert with its neighbors to carry out its responsibility of preserving the complex natural ecosystem of this 1.4 million-acre park, the largest remaining subtropical wilderness in the coterminous 48 states.

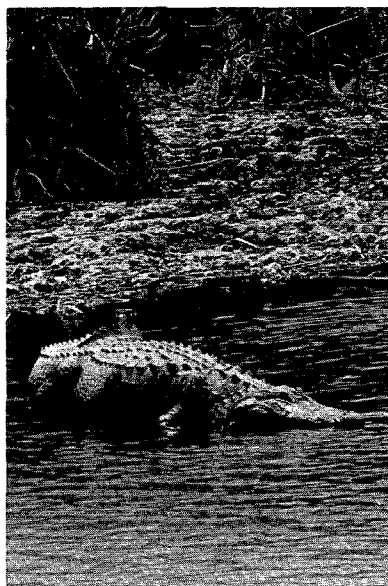
One of the great hopes for the park's preservation now lies in the legal language of the Federal Water Pollution Control Act Amendments of 1972, since water is the park's most critical problem. The amendments set a national goal to attain water quality which would provide for the protection of wildlife resources and recreation. That goal is essential to the future of Everglades National Park.

The problems now facing park management were set in motion as early as the mid-1840s, when the concept of draining the Everglades for farming received first state and then federal government attention. A system of drainage canals begun in the 1880s has evolved into a complex plumbing system, created by the U. S. Army Corps of Engineers, which controls water flow through much of South Florida today.

Mr. Purkerson is an environmental scientist in the Resource Management Division of the National Park Service. Mr. Morrow is a writer-editor with the National Park Service's Office of Communications.



The Everglades region is a 50-mile wide "river of grass" which, during the summer wet season, seeps slowly from Lake Okeechobee more than 100 miles to Florida Bay and the Gulf Coast. Large as it is, the park does not include the northern and eastern reaches of the Everglades, although it



NATIONAL PARK SERVICE PHOTO

remains dependent upon the continued flow of water from those areas. Without the life-sustaining water, the park cannot survive in its present state.

Two key provisions of the water control legislation give hope for the future of Everglades National Park. Section 208 of the act establishes state responsibility for water management planning to achieve comprehensive state plans controlling future use and development of waters within each state. Section 303 provides for the establishment of state water quality standards. Florida's water quality standards, first approved by the secretary of the interior on January 17, 1968, and amended nine times, are now being completely revised to conform with regulations adopted by the Environmental Protection Agency.

Through participation in the efforts to establish future water management plans and detailed water quality standards, the National Park Service can work with the state of Florida to assure that the water needs of Everglades National Park are effectively met.

The water problems of South Florida in general, and the Everglades region in particular, have been the subject of close study and cooperation among a variety of federal and state agencies including the National Park Service, U. S. Geological Survey, Corps of Engineers, Fish and Wildlife Service, EPA, and several state, county, and local bodies. A variety of federal laws enacted in the last decade have ensured continued close cooperation among these agencies.

In May 1976 the Environmental

Protection Agency met in Washington with the leading water quality authorities of the National Park Service, Fish and Wildlife Service, and Bureau of Outdoor Recreation. EPA staff officials detailed the means established under the 1972 law and associated regulations for Interior Department agencies to use in participating in state planning processes and the development of state water quality standards. Subsequently, EPA proposed the development of special demonstration projects where the Section 208-related concerns of Interior Department agencies could be brought to bear on a specific plan-

ning effort.

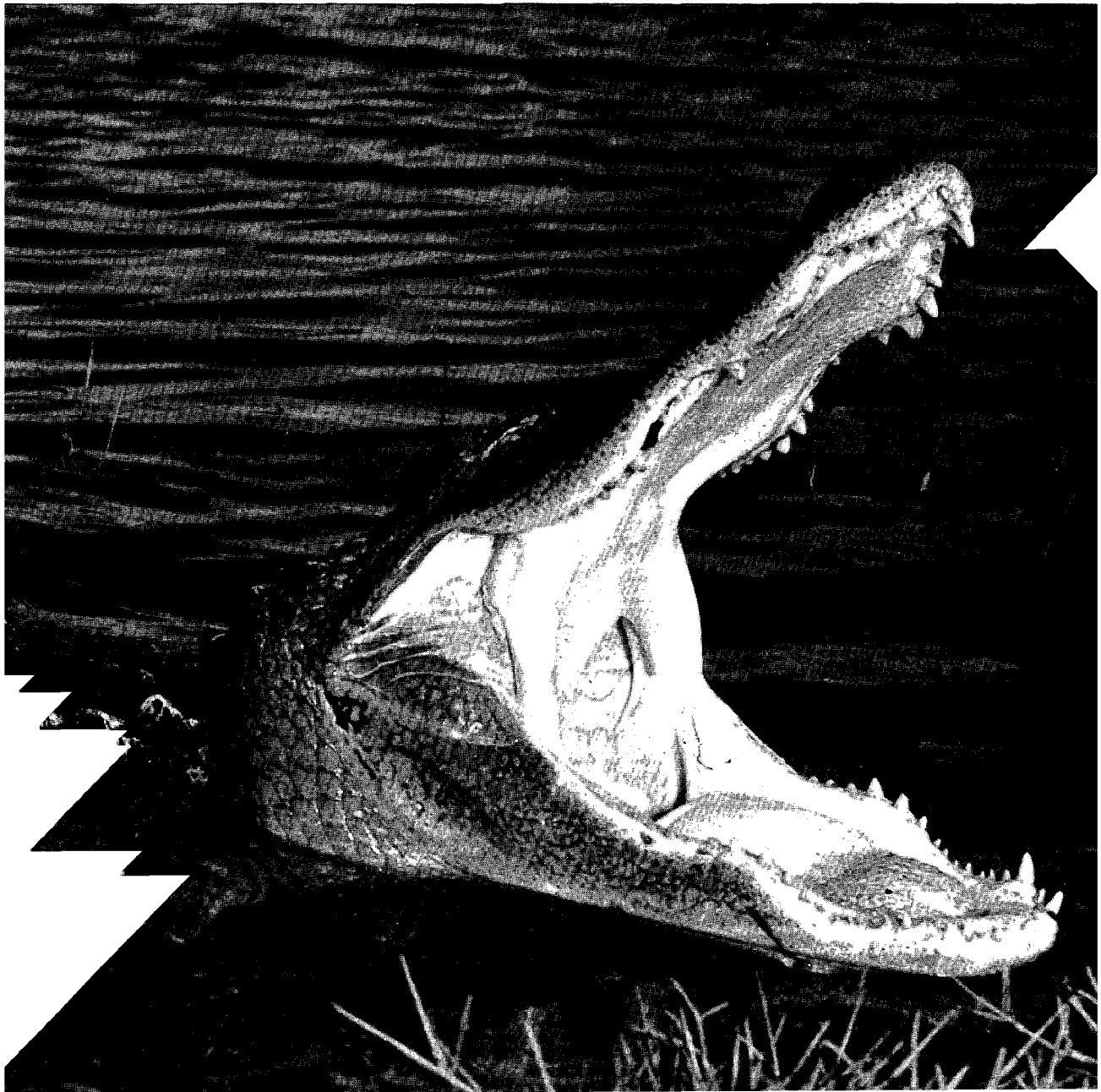
At EPA's request, the National Park Service compiled a list of nearly 100 areas having identified water quality problems. The Fish and Wildlife Service developed a similarly long list. From the park service list four areas were selected for possible special demonstration 208 projects. One of the four was Everglades National Park.

At Everglades National Park the most critical concern is over an area known as Taylor Slough. Taylor Slough originates adjacent to the park's eastern boundary on lands owned by Aerojet General Corpora-

tion and Context Industries, Inc. Approximately 90 square miles of the Taylor Slough watershed are located outside of the park.

Taylor Slough and its associated estuaries support more than 90 percent of the American crocodiles and Cape Sable sparrows known to survive in the United States. It provides optimum habitat for more than half of the known populations of nesting reddish egrets and roseate spoonbills. It supports significant numbers of several other species, including the bald eagle, symbol of the United States. Parts of Florida Bay fed by Taylor Slough are within the critical

NATIONAL PARK SERVICE PHOTO



habitat areas for the American crocodile and the manatee.

For the park and its human visitors, Taylor Slough is the sole source of water for the Royal Palm Visitor Center-Anhinga Trail Complex, the most heavily visited wildlife viewing attraction within the national park. More than 400,000 visits to the area are recorded annually. Clearly, Taylor Slough is vital to the preservation of the park as it is now known.

But much of Taylor Slough does lie outside of the park in private ownership. The immediate economic interests of private corporations seem to favor responding to increasing pressure for agricultural, industrial, and residential development in the region.

In 1961 Aerojet General acquired 33,600 acres of land in the Taylor Slough headwaters for development of an aerospace industrial complex. Although the industrial development was never fully realized, the property remained in Aerojet General's control. In 1968 the Corps of Engineers completed Canal L-31W, which intercepts Taylor Slough along the eastern boundary of the park. Recognizing the threat to the park's water resource needs, Congress passed new legislation in 1970 which guaranteed a minimum scheduled flow of water into the park via Taylor Slough. (Meeting this requirement would require a pumping station, as yet unbuilt.)

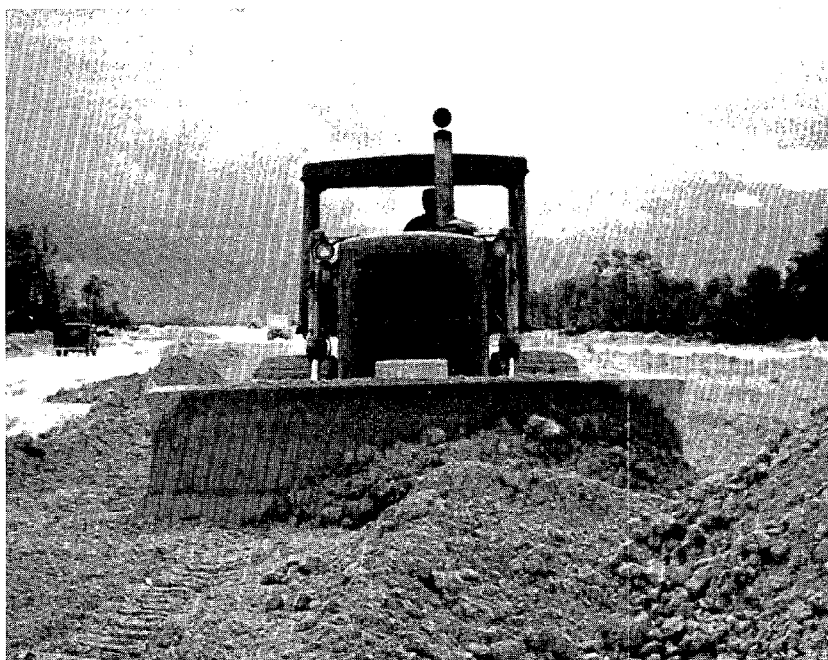
Then in May 1973, Aerojet General sold more than 10,500 acres in Taylor Slough to Context Industries, Inc. Context soon began constructing a roadway across the axis of Taylor Slough, subdividing the land, and selling off section lots. The National Park Service, the Department of the Interior, and concerned conservation organizations protested the Context developments. Dade County placed a building and zoning moratorium on the lands, but the moratorium was not permanent. Projected development under present zoning could mean the establishment of 11,500 dwellings with an estimated human population of 50,000 in the 90-square-mile upper Taylor Slough drainage area.

The risks of inaction were clear. The Section 208 demonstration project for the Everglades became a primary concern of the National Park Service. At the same time, the park service sharply increased the scientific research budget and staffing for Everglades National Park. The research results, the agency believes, will provide even more detailed and specific information on the park's water needs in terms of quality, quantity, and sources. The research program will focus on the east boundary area of the park.

As part of the expanding research program and the 208 demonstration

places final responsibility on such projects with state and local government), the park service planned a contribution to the county effort. A contract was made with the Miami office of the U. S. Geological Survey to help with the planning. USGS, together with park staff members, prepared a preliminary planning document which defines the proposed 208 study area, identifies problems and issues within the study area, and develops a basic strategy for acquiring necessary supporting information not yet available. Their draft report was presented to Dade County for incorporation into its ap-

NATIONAL PARK SERVICE PHOTO



Spreading fill for an Everglades airport. The ecological effects of construction work such as this are felt far beyond the immediate vicinity.

project, Susan Wilson was named east boundary coordinator on the park staff. Her role is to promote more effective liaison with the multiplicity of federal, state, county, and municipal agencies concerned with the problem. She will also develop closer ties between the park and members of the academic community, interested organizations, and private citizens.

To speed approval of a Dade County 208 demonstration project (one must remember that Section 208

plication to EPA for an Everglades east boundary 208 demonstration project.

At Atlanta in November 1976, Dade County held discussions with EPA regarding the proposed 208 demonstration project. A second meeting in Miami in December 1976 brought EPA and Dade County closer to a negotiated agreement.

The proposed agreement identifies actual as well as potential participants in the project from a variety of government agencies at local, state,



Gates such as these control the water supply to the Everglades.

and federal levels. It proposes the full-time assignment of an Everglades National Park employee to work with the Dade County 208 project planning staff. The final plan is only beginning to take shape in raw outlines, but a cooperative spirit among the various levels of government promises a bright outlook not only for the plan itself but also for the future of that part of the park which is dependent on the waters of the Taylor Slough drainage.

The scope of direct involvement by the National Park Service in this project, which involves extensive interests outside park boundaries, establishes a precedent for the park service. The need for close cooperation is obvious, however, in view of the concentrated effort foreseen by the park research staff, and the massive planning and research effort encompassed by the large Dade County 208 demonstration project.

Both studies will focus on a 1,600-square-mile area of South Florida. The critical questions, however, revolve around privately held lands amounting to about 450 square miles within the larger area. The past park service practice of minimal participation in matters beyond park

boundaries can no longer work in situations such as this. While various laws have mandated contributions to the planning and development programs of park neighbors, it is greater recognition of the common problems faced by the parks and their neighbors which has encouraged a deeper commitment to park service participation in such programs.

The immediate critical problem facing county and park officials remains the future of Taylor Slough and the water flow into the park from upper Taylor Slough. But other problems, important in the long range, must also be faced.

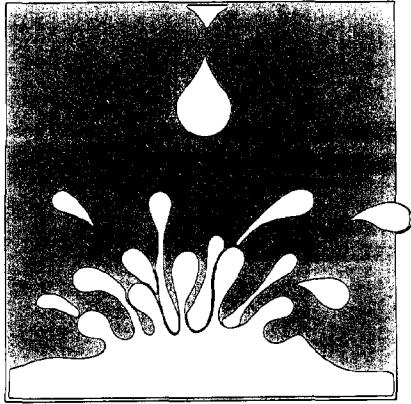
Cutting deep through marshes bordering the Everglades, the C-111 canal has separated areas adjacent to the park from the southeastern panhandle of the park. The canal, built to provide a barge route to move rocket engines from the ill-fated Aerojet General works to Cape Canaveral, does not serve its intended purpose. Nonetheless, it is present and does disrupt the natural continuity of the region.

And, on the park's northeastern boundary, portions of the Shark River Slough have been substantially reshaped by the development of

water conservation basins. Like the neighboring Taylor Slough, Shark Slough provides water resources for a significant area of the park. The Shark River Valley area, second most popular visitor attraction within Everglades National Park and the habitat of several threatened or endangered species, is dependent for preservation on its vital water supplies. Without adequate protection, Shark Slough too faces radical changes in character.

The results of the Dade County 208 demonstration project and related studies under Section 303 of the water pollution control act will ultimately determine whether the National Park Service can effectively carry out, at Everglades National Park, its mandate given in the law which established the agency in 1916: "... to conserve the scenery and the natural and historic objects and the wild life therein ... by such means as will leave them unimpaired for the enjoyment of future generations."

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Tennis on a Tank

by John S. Blair

TO ANYONE who has toured the Colorado Rocky Mountain communities nestled high among the aspens, it comes as no surprise that flat open space there is at a premium. So it is in Evergreen, a community of approximately 3,000 people which is located 15 miles southwest of Denver.

Tennis has become very popular in Evergreen, as it has in many parts of the country, and the demand for courts has soared. When town residents began a search to locate space for courts, the chairman of the sanitation board, an ardent tennis player, proposed a unique plan. The town needed to expand its sanitation plant, and the planned expansion included grading a large, flat space to accommodate the sludge digester. The chairman proposed the construction of two tennis courts on top of the digester roof.

Ten local families underwrote the cost of the proposed development, formed a nonprofit organization, and solicited membership in the pro-

posed "Sew'R Racquet Club." Initiation fees were set at \$250 and dues were projected at \$100 for subsequent years. In short order, all memberships were sold.

To avoid possible problems with competing uses, the sanitation board let out for bids the multiple-use of the digester roof. The tennis advocates bid \$1,350 per year for the lease and the sanitation board accepted it. The

been a problem. The tennis players have actually served as watchdogs in assuring that the plant is run correctly.

The temperature in the digester is 75 degrees, a by-product of the treatment process. The resultant heat melts any snow and dries any wet surfaces on the courts above, thereby allowing for tennis most of the year.

The club expects to break even in

ANNE S. TOWNSEND PHOTO



Treatment tank supports two tennis courts.

Mr. Blair is NRPA project manager for a special study being conducted for the Environmental Protection Agency to investigate ways to encourage and aid effective working relationships between water pollution planning and control agencies and park and recreation organizations. The goal is to maximize potential public park and recreation benefits resulting from the water quality programs under Public Law 92-500. NRPA will produce a series of guidelines, technical manuals, and audiovisual materials on the subject. A series of training sessions is planned.

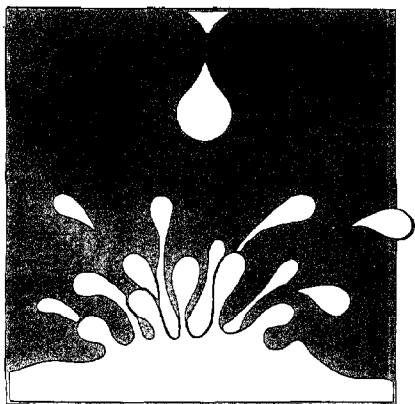
lease is for 10 years, with a 90-day cancellation clause should the sanitation district need to modify the digester (in the event that happens, the club would be reimbursed for its investment, less depreciation).

The two courts cost the club approximately \$12,000. Court preparation cost the taxpayer nothing. If the club had to purchase land and prepare the surface, the two courts would have cost approximately \$75,000.

There was initial concern about odor from the plant, but odor has not

two years, and the city benefits through the lease income, which is used to offset treatment plant operating expenses.

With advance planning this same concept can be incorporated at 201 funded waste treatment facilities throughout the country. The keys to success are a demanding public, a daring park and recreation organization willing to try something different, and a cooperative sanitation department that has an imaginative, progressive director. □



A New Classroom for Environmental Education

by Debra L. Hall

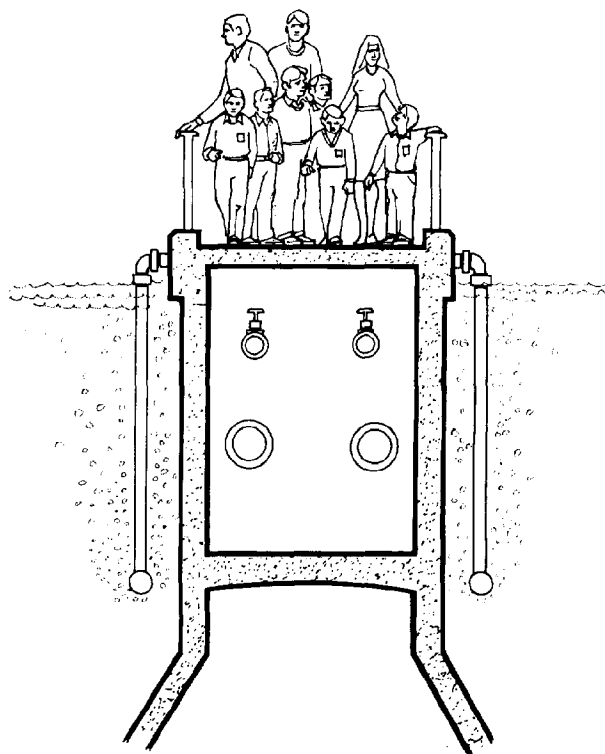
THE ESTABLISHMENT of interdisciplinary programs in environmental education has become a trend in school systems nationwide. Rather than the traditional classroom, these new programs utilize special environmental education centers located within areas or facilities which can serve as living laboratories for the observation of ecological processes. Locations for these centers include parks, farms, museums, zoos, industrial sites, and, increasingly, wastewater treatment plants.

The role of wastewater treatment facilities in environmental education has increased in importance as more and more facilities have been completed under EPA's 201 construction grant program. Wastewater treatment plants can provide excellent opportunities for students to observe and interpret a process of water pollution control which is contributing to the cleanup of lakes and rivers for life support and recreational purposes.

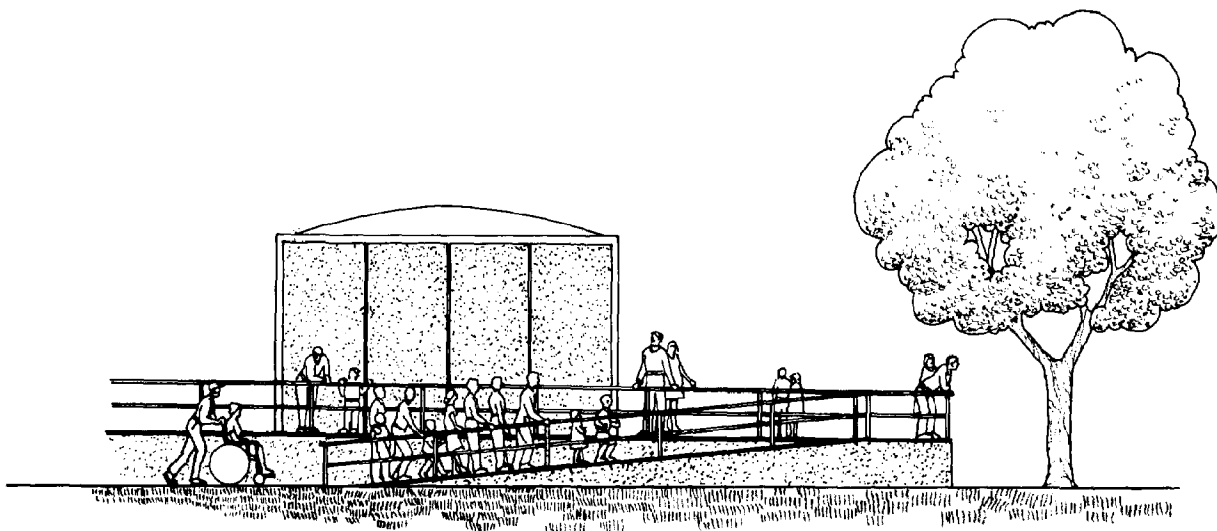
Communities considering the possibility of implementing environmental education programs at wastewater treatment sites should tailor their goals to local demand and their own needs, but should include in their plans the following provisions: to increase citizen understanding of the complex interrelationships in natural systems, particularly between people, waste, and water quality; to provide the maximum benefits in multiple-use opportunities for each public dollar used for facility construction; to explain the planning, economic, and land-use implications of water cleanup programs and encourage citizens to become involved; to break down the "sewage stigma" by allowing the public to observe the wastewater treatment process and plant in action.

Park and recreation organizations can play a definite part in the education process. The National Park Service,

for example, has incorporated semiprogrammed visitor access into the design of one of its water treatment facilities at Yosemite National Park. In the park's El Portal wastewater treatment facility, the operations building has a glassed-in corridor from which visitors can observe the treatment process in the tankage outside, as well as the laboratory and sludge dewatering procedures inside. A bridge at the end of the corridor leads to the incinerator, which visitors can observe at the operational level. The plant is designed in such a manner that the interpretive program can be self-guiding, so that technicians and



Ms. Hall is a research associate with NRPA; her article is adapted from the Association's soon-to-be-printed publication, "Public Benefits from Water Cleanup: Environmental Education Opportunities," which is funded by EPA's Office of Land Use Coordination in Washington, D.C.

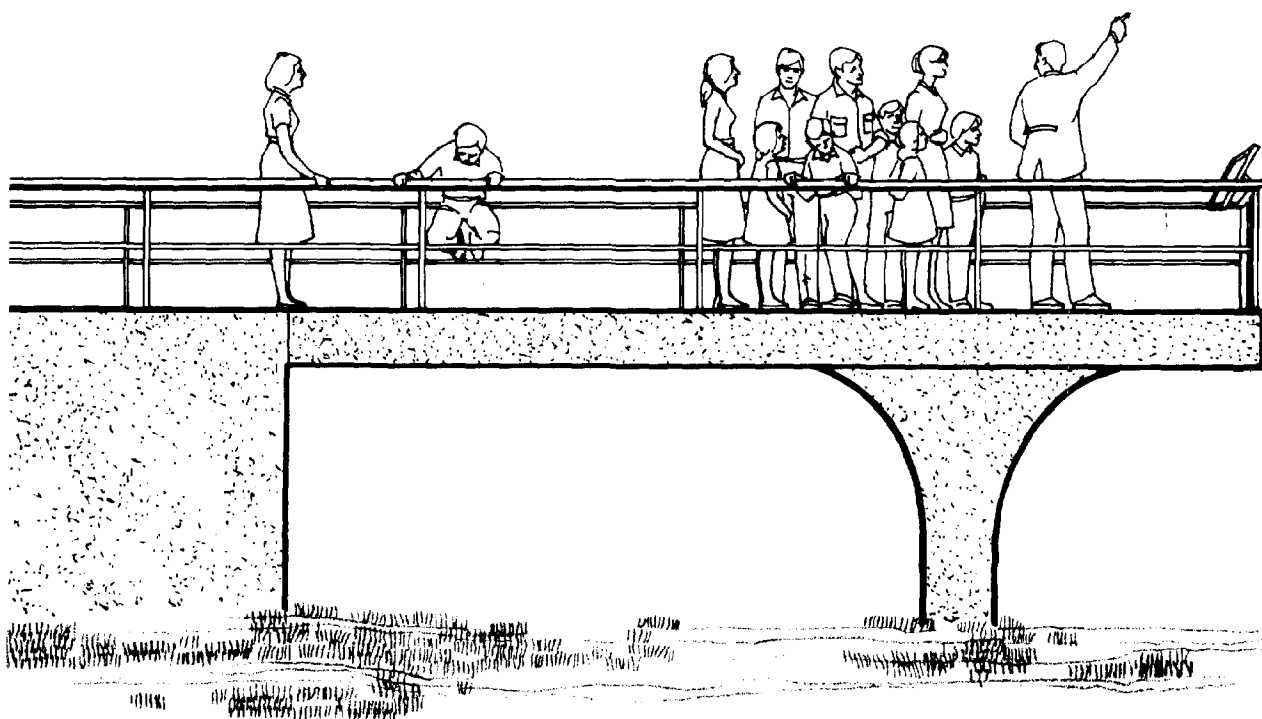


plant personnel will not be disturbed by visitors. The park service also has proposed a low-key, self-guided interpretive program for its Big Meadows wastewater treatment facility at Shenandoah National Park. These types of visitor awareness programs suggest a trend from the interpretation of the natural environment towards the more sophisticated approach of studying the inter-relatedness of people and environment.

In municipalities as well as national parks, wastewater treatment facilities can offer substantial educational opportunities in return for a small investment of funds. The

land which surrounds waste treatment facilities—often wooded areas or other open spaces—can provide additional benefits to area residents, especially if it is easy to reach via standard forms of transportation.

The multiple-use concept for wastewater treatment facilities is not altogether new in some parts of the country. For 20 years, the Washington Suburban Sanitary Commission, serving the Washington, D.C., metropolitan area, has invited community groups, especially public school classes, to tour its wastewater disposal plants. In fact, the WSSC has had a 20-year standing arrangement



with the two major public school systems in its service area to pay school bus transportation costs to and from the plants for approved tours.

Until the late sixties, WSSC tours were given by plant laboratory and operational staff, supplemented by representatives from the public information office. During that "era of environmental awareness," the volume for all tours increased and put a burden on WSSC staff.

In 1972, WSSC developed an operating plan for utilizing part-time tour guides. Arrangements were worked out to pay the guides mileage from their homes to the plant and an hourly rate for the time they were involved in scheduled tours. They were delighted to have the opportunity to make some extra money doing something in which they had a real interest. The use of these lay citizens was much less costly and certainly less disruptive than taking operational personnel away from their regular work. The citizen tour guides employed by WSSC have proven to be highly successful in communicating the "process" as well as the "issues" of water pollution control.

Multiple-use of wastewater treatment facilities for environmental education should be preceded by careful assessment of plant design to insure that visitors will be safe and that the plant's operation will not be disturbed. Design modifications for safety and enhancement of environmental education can often be retrofitted to wastewater treatment plants. Usually, the first authorization for such modifications must come from local officials, who approve the intended multiple-use of the wastewater treatment facility. They must insure that the interest groups initiating environmental education programs are doing so because of a realistic need and de-

mand for such activities. They must also insure that provision has been made either publicly or privately for construction, operation, and maintenance costs.

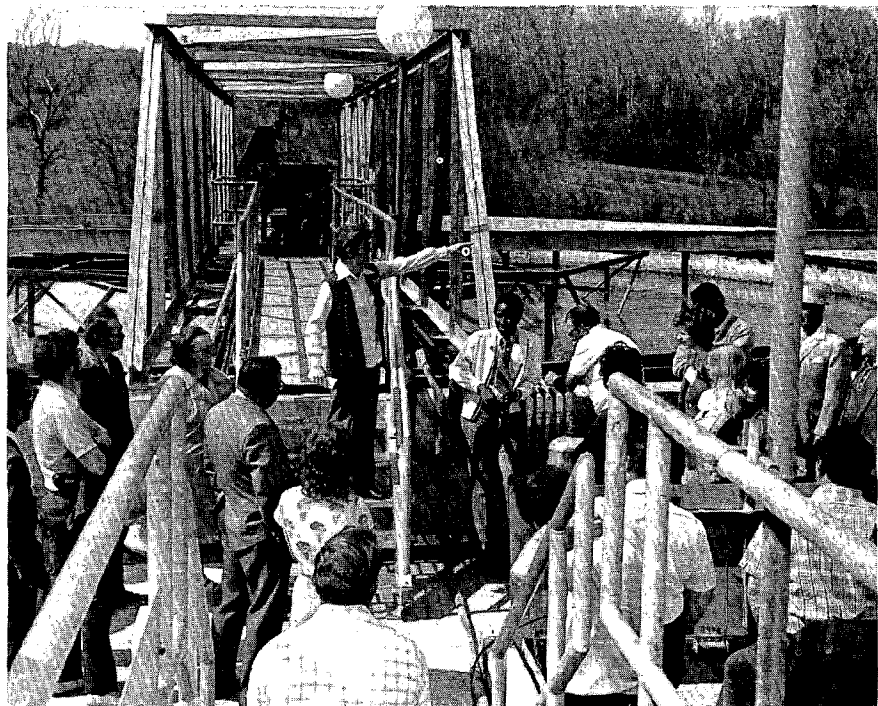
If the wastewater treatment facility is in the planning stages, design modifications can be included in the construction plans. Environmental education initiators will have most success in this phase if the community has chosen a flexible and creative architect who understands the multiple-use concept.

Existing environmental education programs receive funding from a variety of sources—federal, state, county, local, and private, singly or acting in concert. EPA has funded a range of water quality education programs throughout the nation. The Department of Health, Education, and Welfare (HEW) is responsible for environmental education programs under the Environmental Education Act of 1970. HEW also offers other types of funding which could be applied to programs at wastewater facilities.

Private monies in the form of direct gifts from individuals, civic groups, or corporations, or as grants from foundations, can also be tapped. Unlike general tax revenue monies, these sources of funds are almost always nonrenewable. But as seed money, such funds are excellent.

The opportunities and responsibility for initiating water quality environmental education do not rest solely with park and recreation agencies, school systems, or public works departments. Only interagency cooperation and coordination can lead to the development of creative programs. The important thing to remember is the time is right for planning and implementing environmental education programs at wastewater treatment facilities. □

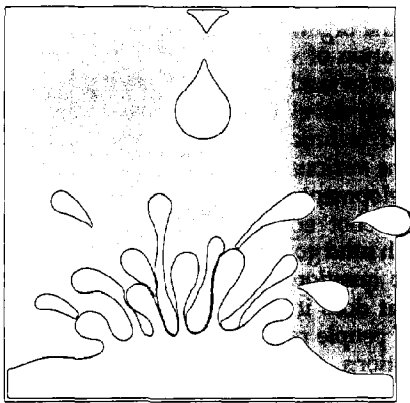
WASHINGTON SUBURBAN SANITARY COMMISSION PHOTO



The Washington Suburban Sanitary Commission uses volunteers to conduct environmental education sessions at its wastewater treatment facilities.

A Recall for Greenways

by Howard Deardorff



THE IMPACT of the 201 and 208 water cleanup programs can be difficult to envision in this crisis-oriented world unaccustomed to good news and beneficial trends. The purpose of this article is to sound a positive note about the opportunities for developing greenways and related benefits resulting from the cleanup of our nation's waters. While the greenway itself is not a new idea, new opportunities for greenway development are now appearing with regard to water-oriented land.

The traditional stereotype of a greenway is illustrated in some textbooks on open-space planning as a wide, uninterrupted expanse of forest and meadow with the intermittent scattering of passive parks and pedestrian trails. This stereotype does not fit in the context of existing waterfronts around the country, however, where a wide range of landscape and land-use characteristics can be found.

When attempting to initiate water-oriented greenways in urban areas, the municipal administrator or environ-

Mr. Deardorff is an environmental design and research communication consultant in Ann Arbor, Michigan; his article is extracted from his soon-to-be-printed publication The Public Benefits of Cleaned Water: Emerging Greenway Opportunities, which is funded by the Environmental Protection Agency's Office of Land Use Coordination in Washington, D.C.

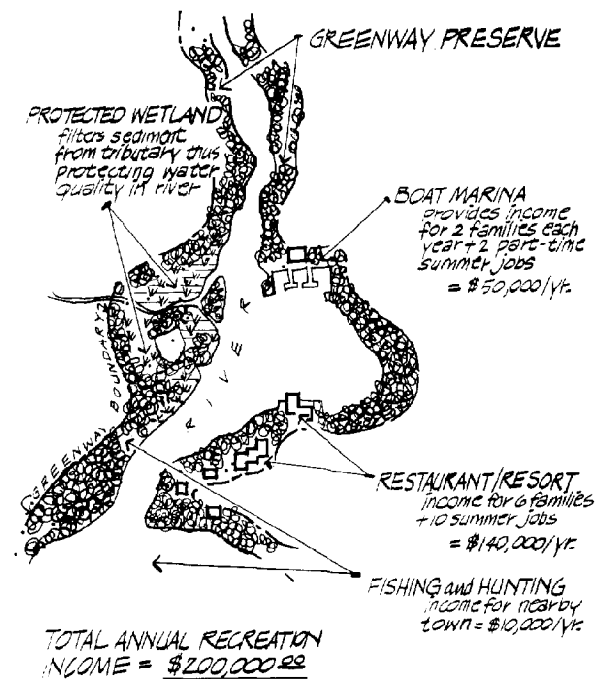
mental conservancy group must first confront the land ownership values of the local citizenry. These can be formidable obstacles to the development of expansive greenways, and at this point many would-be greenway advocates throw up their hands and turn to other more practical and pressing matters. The greenway stereotype simply does not present a realistic land-use alternative for urban shorelines and riverfronts. Only in a rural or natural context, where development pressures and presence are less prominent, does the implementation of more expansive, protected open-space corridors make sense.

A more realistic and workable definition of a water-oriented greenway can only be derived from an understanding of how our present day waterfront has had many diverse uses over the past 250 years.

The twentieth century brought on more complex forms of technology such as the petrochemical industry, advanced food processing, fossil fuel and nuclear energy generation facilities, sophisticated storm drainage collection systems, wastewater treatment facilities, heavy shipping, and recreation. The resulting waterfront land uses are not conducive to the utopian greenway described earlier. The water, however, under the 201 and 208 programs is scheduled to be clean by 1983—and herein lie the new water-oriented greenway opportunities.

To realize these opportunities, greenways must be viewed from a perspective which includes the following understandings:

1. One of the most significant values of a greenway is environmental protection. Greenways provide vegeta-



PROTECTING the ENVIRONMENT can have \$ BENEFITS

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